

PROJECT MANUAL

VOLUME ONE

Roswell Independent School District

NANCY LOPEZ ELEMENTARY SCHOOL

PSFA Project No. P19-010

December 22, 2023



PROJECT MANUAL
VOLUME ONE

DESIGN DEVELOPMENT SUBMITTAL

NANCY LOPEZ ELEMENTARY
SCHOOL

Roswell Independent School District
300 N. Kentucky
Roswell, New Mexico 88201
575-627-2500

December 22, 2023

PSFA Project No. P19-010



PA ARCHITECTS
12400 Menaul NE, Ste. 130
ALBUQUERQUE, NEW MEXICO 87112
505-275-3890

NANCY LOPEZ ELEMENTARY SCHOOL

PSFA Project No. P19-010

ROSWELL, NEW MEXICO

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DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS

1. PROCUREMENT REQUIREMENTS

LEGAL NOTICE

INVITATION TO BID

BID NO: 24-10

The Board of Education, *Roswell Independent School District*, is requesting competitive sealed bids for the construction of *Nancy Lopez Elementary School*.

Project bid/contract documents may be obtained from the location(s) listed in the complete Invitation to Bid (ITB) which may be reviewed at www.risd.k12.nm.us, NM E-Procurement/Bidding System or by contacting the District.

A Pre-Bid Conference will be held on *March 13, 2024, 1:30pm*, at *Roswell Independent School District, Administration and Educational Services Center, Roswell, New Mexico*.

Bids will be received no later than *April 19, 2024, 2pm MDT*. Sealed bids must be delivered to:

*Roswell Independent School District
Roswell ISD Central Receiving 508 W. College Blvd.
Roswell, New Mexico, 88201
Phone No: (575)627-2529*

The RISD Board of Education reserves the right to reject any and all bids and/or cancel this ITB in its entirety.

PUBLISH DATE: March 1, 2024

00 1113-1



**REQUEST FOR PROPOSAL
FOR
NANCY LOPEZ ELEMENTARY SCHOOL
ROSWELL INDEPENDENT SCHOOL
DISTRICT**

Check here if this is not a PSCOC funded project.
Note: If checked, any reference to PSCOC or PSFA does not apply.

DISTRICT RFP NO: 24-10 PSFA PROJECT NO: P19-010

For Contracting Agency: Roswell Independent School District

Contact Person: Chris Thweatt, Chief Procurement Officer

**Address: Roswell ISD Central Receiving 508 W. College Blvd
Roswell, NM 88201**

Telephone: 575-627-2528 E-Mail: cthweatt@risd.k12.nm.us

DEADLINE FOR RECEIPT OF PROPOSALS IS AS FOLLOWS:

DATE: April 19, 2024 TIME: 2:00 PM MDT

DELIVER TO: Roswell Independent School District

Late Proposals will not be accepted. It is the responsibility of the Offeror to ensure that proposals are delivered on time to the correct electronic website or District address stated in the solicitation.

A PRE-PROPOSAL CONFERENCE will be held as follows:

DATE: March 13, 2024 TIME: 1:30 PM MST/MDT

**LOCATION: Roswell Independent School District
Administration and Educational Services Center
300 N. Kentucky, Roswell, NM 88201**

Roswell Independent School District Nancy Lopez Elementary School

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Drawings and Specifications

for

Roswell Independent School District, Roswell, NM

& The

STATE OF NEW MEXICO

PUBLIC SCHOOL FACILITIES AUTHORITY

A. PROJECT DEPOSIT INSTRUCTIONS

Proposal Documents may be obtained at Albuquerque Reprographics upon payment of \$ 500 for each complete set. CHECKS SHOULD BE MADE PAYABLE TO ROSWELL INDEPENDENT SCHOOL DISTRICT. Incomplete sets will not be issued. The successful Offeror will receive refund of his deposit, and any unsuccessful Offeror who returns the Proposal Documents in good and complete condition within fifteen (15) days of the Proposal Opening will also receive refund of this deposit. No deposits will be returned after the fifteen-day period.

B. LOCATIONS TO REVIEW PROJECT PROPOSAL DOCUMENTS:

Design Professional of Record: PA Architects

12400 Menaul Blvd NE Ste 130

Albuquerque, NM 87112 Telephone: 505-275-3890

1. Dodge Reports, 1615 University Boulevard NE, Albuquerque, NM 87102 Telephone: (505) 243-2817
2. , NM 87102 Telephone: (505) 243-2817
3. Reed Construction Data (CMD), 3351 Candelaria, NE, Suite D, Albuquerque, NM 87107 Telephone: (505) 881-8590
4. Builder's News and Plan Room, 3435 Princeton Drive NE, Albuquerque, NM 87107 Telephone: (505) 884-1752
5. Construction Reporter, 1609 Second Street NW, Albuquerque, NM 87102 Telephone: (505) 243-9793
6. Sunglass Plan Room, 648 W. Broadway, Farmington NM 87401 Telephone: (505) 327-0700
7. Plan-it Room, 1155 Westmorland Dr. #102, El Paso TX 79925 Telephone: (915) 781-2900
8. Contractor's Weekly, 3750 Duranzo Ave. El Paso TX 79905 Telephone: (915) 276-8289

C. PROJECT PRICE PROPOSAL INFORMATION:

Price Proposals shall be presented in the form of a total Base Proposal under a Lump Sum Contract plus any additive or deductive alternates, or Bid Lots, per the Proposal Form (Section 00 4113),

Allowances (Section 01 2100) and Alternates (Section 01 2300) as selected by the Owner. A proposal must be submitted on all proposal items, allowances and alternates; segregated proposals will not be accepted.

NOTE: Proposal price shall not include state gross receipts or local options taxes. Taxes will be included in the Contracted Amount at prevailing rates as a separate item to be paid by Owner.

In submitting this proposal, each Offeror must satisfy all terms and conditions of the Proposal Documents. All work covered by this Request for Proposal shall be in accordance with applicable state laws and, if price proposal amount is \$60,000 or more, is subject to the minimum wage rate determination issued by the office of the NM Work Force Solutions Department for this project. Refer to Supplementary Conditions (Section 00 7300). If the price proposal amount of the contractor or any subcontractor exceeds \$60,000, the contractor and/or subcontractor must comply with the registration requirements pursuant to the NM Work Force Solutions Department Registration Act.

D. PROJECT PROPOSAL SECURITY

If Offeror proposal price is greater than \$25,000, Offeror shall provide proposal security in the form of a surety bond executed by a surety company authorized to do business in the State of New Mexico in the amount of **5%** of the total price proposal, or the equivalent in cash by means of a cashier's check or in a form satisfactory to the Owner, must accompany each price proposal in accordance with the Instructions to Offerors.

A 100% Performance Bond and a 100% Payment and Materials Bond executed by a surety company authorized to do business in the State of New Mexico shall be required from the successful Offeror prior to award of contract. The amount of the Bonds shall be the proposal price exclusive of gross receipts tax.

The AIA A312 1984 or 2010 Labor and Materials Payment Bond shall in effect, limit the time line Surety has to respond. The Payment Bond shall be modified as follows:

“Paragraph 6 of this Payment Bond is deleted in its entirety and replaced with the following provision: Within 45 days (1) after the claimant has satisfied the conditions of Paragraph 4 and (2) after the Surety has received at its home office all supporting documentation it requested to substantiate the amount of the claim, the Surety shall pay or arrange for payment of any undisputed amounts. Failure of the Surety to satisfy the above requirements shall not be deemed a forfeiture or waiver of the Surety’s or the Contractor’s defenses under this Bond or their right to dispute such claim. However in such event the claimant may bring suit against the Surety Company and provided under this Bond.”

E. SUBCONTRACTOR LISTING FORMS AND BONDING

IMPORTANT: PLEASE READ:

- 1. 00 4334 SUBCONTRACTOR QUALIFICATIONS STATEMENT LISTING FORM
And
00 4336 SUBCONTRACTOR AND ANTI-TRUST COMBINED LISTING FORM:**

BOTH completed Forms SHALL BE PLACED IMMEDIATELY AFTER YOUR LETTER OF TRANSMITTAL. The Committee shall evaluate the entire GC 'TEAM' which includes all of the subcontractors that meet the listing thresholds.

- 2. SUBCONTRACTOR QUALIFICATIONS STATEMENTS:** one (1) copy of each subcontractor Qualifications Statement shall be submitted in the technical proposal. Please ensure that the Qualifications Statements included match the subcontractors you've listed on the 00 4334 Form.

NOTE: The District ~~may~~ **will not** allow additional time to produce the additional required copies of the Qualifications Statements to be submitted to the Procurement Manager at the date and time stated in the Sequence of Events Section II A, and RFP Response Format and Organization Section III C, to ensure a timely delivery of the original technical proposal. If not stated, all copies of the Qualifications Statements must be submitted with the original on the date and time stated.

Qualifications Statement listing threshold is 5% of the Architect Estimate or \$50,000, whichever is greater.

3. 00 4336 STANDARD SUBCONTRACTOR LISTING FORM AND BONDING

Completed Form 00 4336, the standard Subcontractor Listing Form shall list the subcontractors responsible for the work that meet the listing threshold per statute, one half of one percent or \$5,000, whichever is greater.

Each subcontractor shall provide a performance and payment bond on a public works building project if the subcontractor's contract (to the General Contractor) for work to be performed on a project is one hundred twenty-five thousand dollars (\$125,000) or more. Failure of a Subcontractor to provide required bond shall not subject the Owner to any increase in cost due to approved substitution of Subcontractor.

F. COMPLETION TIME AND LIQUIDATED DAMAGES:

The Proposal Documents contain a time for completion of the work and further impose liquidated damages for failure to complete the work within the stated time period. No Offeror may withdraw his proposal for **45 days** after the actual date of the opening thereof.

G. METHOD OF AWARD:

The Owner intends to award this Project to the highest ranked Offeror in accordance with the Request For Proposal requirements. The Owner reserves the right to reject any and all proposals, to waive technical irregularities, and to award the contract to the Offeror whose proposal it deems to be in the best interest of the Owner.*

***NOTE: Please read all of the RFP documents carefully for mandatory requirements.**

H. FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

The agreement for the work shall be the PSFA Standard Form of Agreement Between the Owner and Contractor 2019 Edition Ver. 3.5 and General Conditions, 2019 Version 3.1a, with the basis of

payment as a Stipulated Sum. This document is printed in its entirety in the Project Manual, and it is also available on the PSFA website at www.nmpsfa.org, under Contract Documents and Forms.

I. PROJECT INFORMATION

A. PURPOSE OF THIS REQUEST FOR PROPOSALS

Pursuant to the NM Procurement Code governing the competitive sealed proposal process for construction, more specifically 13-1-111, NMSA 1978, 1.4.1.29 through 1.4.1.146, and NMAC 1.4.8.1 through 1.4.8.17, the District has made a determination that the use of the competitive sealed bidding method of procurement is not advantageous to ensure that the project described herein is delivered in a quality manner, and within time and budget constraints. Therefore, it is hereby determined that soliciting competitively sealed proposals for construction of Nancy Lopez Elementary School is the most effective means to ensure the project is delivered accordingly.

The award of a contract for construction shall take into consideration certain contractor qualification and performance factors that add value to a procurement contract. Factors such as contractor past performance, technical expertise and experience, management capabilities and resources, subcontractor teams and craft personnel resources, will form the basis for the criteria to be considered, in addition to lump sum price to perform the scope of work. Award shall be made in accordance with the terms, conditions, and requirements stated herein.

This is a qualifications based selection with cost as a consideration. The Offeror is required to provide the qualifications and other documents as requested in this RFP. The Price Proposal will be evaluated separately from the Technical Proposal.

B. PROJECT FUNDING

The District and Public School Capital Outlay Council/Public School Facilities Authority have funds to administer this project and will be referred to throughout the contract documents as “Owner”.

The Design Professional estimate of probable construction cost is:

\$ 22,938,732

***(Note: This estimate does not include NM Gross Receipts Tax)**

C. PROJECT DESCRIPTION

The project is described as:
Nancy Lopez Elementary School
41,112 gross square foot replacement school,
300 student capacity, grades Pre-K through grade 5.

D. PROJECT CONTACTS

Any questions concerning the selection process for this Request for Proposals shall be submitted to the Procurement Manager listed below. Technical questions regarding the scope of work shall be submitted to the Design Professional of record, and if appropriate, to the District Representative.

For questions regarding the selection process:

Procurement Contact Name: Chris Thweatt, Chief Procurement Officer
Address: Roswell ISD Central Receiving
508 W. College Blvd
City/State/Zip: Roswell, NM 88201
Phone Number: 575-627-2528
Email Address: cthweatt@risd.k12.nm.us

For technical questions regarding the scope of work, drawings and specifications:

District Design Professional: PA Architects, Nancy Bartlett, RA
Address: 12400 Menaul Blvd NE Ste 130
City/State/Zip: Albuquerque, NM 87112
Phone Number: 505-275-3890
Email Address: nancy@paarchitects.net

PSFA Regional Manager Contact Name: Jim Hill, Regional Project Manager
Address: 1312 Basehart SE
City/State/Zip: Albuquerque, NM 87106
Phone Number: 505-468-0307 mobile: 505-469-6808
Email Address: jhill@nmprsa.org

E. PROJECT PLANNING SCHEDULE

Key project planning schedule milestones are:

Tentative Notice of Intent to Award	May 14, 2024
Tentative Notice of Award	May 29, 2024
Anticipated Substantial Completion	October 31, 2025

F. SUMMARY SCOPE OF SERVICES

A summary of services the General Contractor shall perform to complete the Project, include, but are not limited to, the following:

- a. Planning, supervision and timely completion of the Project
- b. Prepare, monitor, and maintain Project schedule
- c. Material procurement, delivery, and storage
- d. Submittals and Project documentation
- e. Manage construction labor and materials
- f. Coordinate with Owner direct labor, subcontractors, and Owner furnished equipment suppliers, if applicable

- g. Manage site access, safety, security, and quality control
- h. Manage testing, inspections
- i. Coordination of all utility inspections
- j. Project close-out and warranty period

G. DEFINITIONS AND TERMINOLOGY

This section contains definitions that are used throughout this Request for Proposals (RFP), including appropriate abbreviations.

“Architect” means a member of the project team who is a New Mexico licensed architect and is responsible for the architectural services.

“Award of Contract” shall mean a formal written notice by the District that a firm has been selected to enter into negotiations for a contract for construction services.

“Construction Industries Division – licensing treatment of general and limited partnerships and joint ventures.

(1) General partnerships are to be separately licenses when the partnership is bidding for and performing the work, provided that partnerships are legally authorized to do business in NM in order to be licensed but not requiring that they be separately licensed, see 14.6.3.8 (B)(3) NMAC.

(2) Limited partnerships are required to be separately licenses even though one or more of its partners holds a license or qualifying party certificate (14.6.3.8(B)(1) NMAC.

(3) Joint ventures must be separately licensed per 14.6.3.8(B)(2)(a) NMAC. No two or more persons shall submit a joint bid or jointly engage in contracting unless operating as a validly licensed joint venture.

“Construction Contractor” means successful Offeror awarded the contract that holds a current State of New Mexico general contractor license designation of GB-98.

“Contract” means an agreement between a state agency or school district and a New Mexico licensed contractor for the work covered by this RFP.

“Contract Documents” means any one, or combination, of the following documents: Agreement Between the Owner and the General Contractor for Construction, General Conditions of the Contract for Construction, and the drawings and specifications.

“Contractor” means any person, corporation, or partnership that has entered into a contract with a state agency or a local public body.

“Co-Owner” means the Public School Facilities Authority, on behalf of the Public School Capital Outlay Council that is funding or partially funding the project.

“Department of Finance and Administration (DFA)” is the cabinet agency with central accounting authority and responsibility, which issue payments for work performed under this RFP involving DCP/PSCOC funding.

“Design Professional” means architect or engineer.

“Determination” means the written documentation of a decision of the District and/or the Selection Committee, including findings of fact required to support a decision. A determination becomes part of the procurement file to which it pertains.

“Limited partnership” is formed upon the filing of a certificate of limited partnership with the Secretary of State. Limited partnership shall state whether partners are general or limited. General partners are agents of the limited partnership, may manage the limited partnership, and may be held liable for the limited partnership’s obligations.

“Joint venture” is a partnership formed for a single transaction. As a partnership, it can be created without a formal, written agreement meeting (1) a community of interest in the performance of a common purpose; (2) a joint proprietary interest in the subject matter, (3) a mutual right to control, (4) a right to share in the profits, and (5) a duty to share in any losses which may be sustained.

“Offeror” is any person, corporation, or partnership who chooses to submit a proposal in response to this RFP.

“Owner” is the District.

“Partnership” is an ‘association of two or more persons who become co-owners of a business for profit per NMSA 1978 54-1A-202(a) 1996. Note: When forming a partnership, written partnership agreements are not required. ‘In a ‘general partnership’ each partner is an agent of and may bind the partnership unless the partnership has limited that partner’s authority.

“Proposal” is the Offerors response to this RFP.

“Public School Capital Outlay Council (PSCOC)” is the body with responsibility to approve allocations for public school capital outlay assistance.

“Public School Facilities Authority (PSFA)” is the agency, under the Public School Capital Outlay Council (PSCOC) charged with responsibility for overseeing projects and shall serve as the owner’s representative for work performed under this RFP.

“Request for Proposals” or “RFP” means all documents, attached or incorporated by reference, used for soliciting proposals for this project.

“Resident Business Preference” means a business that has a valid resident business certificate issued by the New Mexico Taxation and Revenue Department pursuant to §13-1-21 NMSA 1978 as amended.

“Native American Resident Business Preference” means a business that has a valid Native American resident business certificate issued by the New Mexico Taxation and Revenue Department pursuant to §13-1-21 NMSA 1978 as amended.

“Resident Veteran Business Preference” means a business that has a valid resident veteran business certificate issued by the New Mexico Taxation and Revenue Department pursuant to §13-1-21 NMSA 1978 as amended.

“Native American Resident Veteran Business Preference” means a business that has a valid Native American resident veteran business certificate issued by the New Mexico Taxation and Revenue Department pursuant to §13-1-21 NMSA 1978 as amended.

“RFP Documents” means any one, or combination, of the following documents: Request for Proposal, technical proposal, price proposal, contractor qualification statement, subcontractor qualification statements, Price Proposal.

“Responsible Offeror” means an Offeror who submits a responsive proposal and who has furnished, when required, information and data to prove that his financial resources, production or service facilities, personnel, service reputation and experience are adequate to make satisfactory delivery of the services described in the proposal.

“Responsive Offer” or “Responsive Proposal” means an offer or proposal, which conforms in all material respects to the requirements set forth in the RFP. Material respects of a RFP include, but are not limited to quality, quantity or delivery requirements.

“Selection Committee or Evaluation Committee” means a body constituted in accordance with Section 13-1-121 NMSA 1978 and 1.4.8.16 NMAC 2005 to perform the evaluation of Offeror proposals and make a recommendation for selection (short list) or final selection recommendation to the governing body. The Evaluation Committee consists of a minimum of three members, should collectively possess expertise in the technical requirements of the project, construction design and contracting.

“Statement of Qualifications Forms” means the forms included as part of this RFP, which all Offerors shall complete, including the qualification for the team member or partners and subcontractors proposed for the project.

“Technical Irregularities” are matters of form rather than substance evident from the Offeror proposal document, or insignificant mistakes that can be waived or corrected without prejudice to other Offerors; that is, when there is no effect on price, quality or quantity. If discussions are not held or if best and final offers upon which award will be made have been received, the Evaluation Committee may waive such irregularities or allow an Offeror to correct them if either is in the best interest of the Owner. Examples include, but are not limited to the failure of the Offeror to:

- a) Submit the number of signed proposals required by the RFP
- b) Sign the proposal, but only if the unsigned proposal is accompanied by other material indicating the Offeror’s intent to be bound; or
- c) Acknowledge receipt of an amendment to the RFP, but only if: (1) it is clear from the proposal that the Offeror received the amendment and intended to be bound by its terms; or (2) the amendment involved had no effect on price, quality or quantity.

Note: A technical irregularity can be waived if the irregularity does not affect quality, price, or time elements of the project.

“User” means the school district staff occupying the facility or facilities, for which a project is being designed.

"User Contact" is the person designated by the District to speak on behalf of the staff concerning the scope of work and programming requirements for the project.

The terms **"must," "shall," "will," "is required,"** or **"are required"** identify *a necessary* item or factor. Failure to comply *with such* an item or factor *may* result in the rejection of the Offerors proposal.

The terms **"can," "may," "should," "preferably,"** or **"prefers"** identifies a desirable or discretionary item or factor. Failure to comply with such an item or factor *may* result in the rejection of the Offerors proposal. *Rejection of the proposal will be subject to review by the Selection Committee and the final decision on rejection will be made by the Committee Chairman.*

H. PROCUREMENT LIBRARY

A document library has been established for Offerors to review. The library contains the information listed below and the content of each item can be located on the PSFA website at <https://www.PSFA.org> (Website Path) Administration > Procurement > Document Library for RFPs.

Guidelines to the New Mexico Public School Adequacy Standards:

- NMAC 6.27.30 Statewide Adequacy Standards
- NMAC 6.27.31 Special Purpose Schools Adequacy Planning Guide
- NMAC Rules – Public School Capital Outlay Council (NMAC 6.27.1 & 6.27.2)
- Facilities Master Plan Scope of Work Checklist
- Facilities Master Plan Scope of Work Checklist Charter
- The State of New Mexico PSFA HVAC and Controls Performance Assurance Program Manual
- The State of New Mexico PSFA TAB Performance Assurance Contractor Manual
- The State of New Mexico PSFA Roofing Program Handbook

Procurement Regulations NMAC 1.4.1.1. may be obtained from the following website:
<https://www.generalservices.state.nm.us>

II. CONDITIONS GOVERNING THE PROCUREMENT

This section of the RFP outlines and describes the major events of the selection process and the conditions that govern this procurement.

A. SEQUENCE OF EVENTS

	Action	Responsibility	Date / Time
1.	Issue RFP	District	03/01
2.	Pre-Proposal Conference Location: 300 N. Kentucky, Roswell, NM Note: Mandatory	District Yes	03/13
3.	Deadline to Submit Written Questions re: RFP Process	Potential Offerors	03/22
4.	Response to Written Questions re: RFP Process and Addendum	District	04/01
5.	Date of Release of Last Addenda Prior to Submission of Proposal	Design Professional	04/05
6.	Submission of Proposal	Offerors	04/19
6A.	Submission of Copies of Technical Proposals (NOT applicable)	Offerors	N/A
7.	Proposal Evaluation	Evaluation Committee	TBD
8.	Notice of Short Listed Offerors	Procurement Manager	04/25
9.	Interviews of Short-listed Offerors (If held)	Evaluation Committee & Offerors	05/02
10.	Issue Recommendation of Award to Governing Board/Notice of Intent to Award	Procurement Manager & Design Professional	TBD
11.	Contract Negotiations	District	TBD
12.	Issue Notice of Award, Prepare Contract	Design Professional & District	TBD
13.	Protest of Award Deadline	Offeror(s)	TBD

B. EXPLANATION OF SEQUENCE OF EVENTS

1. Issue RFP

This RFP is issued by the District in accordance with the provisions of Sections 13-1-111 and 13-1-117 NMSA 1978, General Government Administration Procurement Regulations NMAC 1.4.1.29 through 1.4.1.47, and General Government Administration Procurement Code Regulations for Use of Competitive Sealed Proposals for Construction and Facility Maintenance, Services and Repairs, NMAC 1.4.8.1 through 1.4.8.17.

2. Pre-Proposal Conference

This is the date and time of the meeting to review the RFP documents, including the Scope of Work, Response Format, Schedule, and Price Proposal requirements.

In addition to the Pre-Proposal Meeting, the Owner may allow Prospective Offerors the opportunity to visit with the project User Representative with permission from the District Representative. **Please note that after the proposal submission due date, the Offerors are not allowed any contact without the District Representative's permission. The District may, however, contact Offerors for clarification purposes, changes in the Schedule of Events, notices of non-responsiveness or responsiveness of proposals, and notices of shortlist status and/or interviews.**

3. Deadline to Submit Written Questions regarding the RFP Process

This is the date and time set for submitting written questions regarding the RFP document and procurement process to the Procurement Manager. Note: questions regarding the drawings and specifications shall be directed to the Design Professional.

4. Response to Written Questions to RFP Process and Addendum

This is the date and time set by the Procurement Manager to issue a response to written questions regarding the RFP procuring document or the procurement process. The Procurement Manager will coordinate this response with the Design Professional to be included in the issuance of addenda, if applicable.

5. Date of Release of Last Addenda Prior to Submission of Proposals

This is the date that has been set by the Design Professional that signifies no other addenda will be issued on the project so that Offerors have time to finalize their responses.

6. Submission of Proposal

This is the date and time that has been set for the submission of Proposals. Late Proposals will not be accepted. It is the Offeror's responsibility to ensure that Proposals arrive at the appointed location, date and time. Proposals may be delivered early to avoid any possible delay of the submission. The documents shall be in a sealed container with the RFP number and opening date indicated on the bottom left hand side of the container as follows:

PROPOSALS RECEIVED AFTER THE DEADLINE SHALL BE CONSIDERED NON-RESPONSIVE. Proposal submittals shall be date and time-stamped by the District office that is designated to receive proposals. A public log will be kept of the names and submittal times of all Offerors who submitted proposals.

The Procurement Manager shall review the proposals for completeness and compliance with the mandatory requirements prior to distribution to the Evaluation Committee. If any proposal submitted is deemed non-responsive, the Offeror will be notified in writing of such

determination which will include the right of the Offeror to protest the decision. (See Section II.C.1.). The Procurement Manager shall designate a witness to be present during the opening the proposals. The witness and Procurement Manager shall sign the "List of Offerors" for the procurement file.

7. Proposal Evaluation

This is the date and time that the Evaluation Committee will convene to discuss the proposals and to report individual scores to the Procurement Manager. Individual scores shall be recorded on the Master Score/Rank Sheet. After the scores have been recorded, the Procurement Manager shall open the Price Proposals and calculate the points for each

Offeror. The Procurement Manager shall record the scores allocated to Price for each Offeror on the Master Score/Rank Sheet.

8. Notice of Short-Listed Offerors

The Procurement Manager shall send the Score Sheet to PSFA for review prior to any notification of the evaluation results. Upon PSFA approval, the Procurement Manager may notify all Offerors of the Short List Rank of Offerors in writing, and state whether or not interviews will be held.

Note: The Selection Committee may hold interviews with the highest-ranked Offerors, where there is a natural break in the scoring. The number of interviews, if held, will be at the discretion of the PSFA and the Selection Committee. If interviews are not held, the decision shall be documented for the procurement file.

9. Interview of Short-List Offerors

If interview(s) are to be held, the date, time and location of the Interview meeting will be included with the notice to those Offerors selected for interview. A list of questions shall be distributed to the Short-List Offerors that includes the points to be allocated to each question. Points allocated to the questions shall be evenly distributed.

NOTE: A “Pre-Interview” meeting may be held by the District Representative, if it is determined it is in the best interest of the short-listed Offerors and the Project, to answer questions regarding the interview process, and to distribute the list of prepared questions to be addressed.

10. Recommendation of Award to Board of Education

The Procurement Manager shall prepare a procurement report and a recommendation to the Board for award of the Project that shall include the ranking of all Offerors and the final ranking of Short-Listed Offerors.

Upon Board of Education approval, the Design Professional shall prepare the Notice of Intent to Award a contract to the Board approved Offeror.

11. Contract Negotiations

The Owner reserves the right to enter into negotiations with the highest ranked Offeror per NMSA 13-1-115. If contract negotiations are not finalized within a reasonable period of time, the Owner will conclude negotiations with the selected firm and begin negotiations with the next ranked firm based on final ranking.

12. Issue Notice of Award, Prepare Contract

Upon the successful completion of contract negotiations and Board of Education approval, the Architect shall issue the Notice of Award and prepare the Contract for Construction.

13. Protest Deadline

The protest period for **award** of the contract shall begin the day after the date of the Notice of Award. This date shall be determined by the Procurement Manager. See Section C, Paragraph 1, below for more detail.

C. STANDARD CONDITIONS GOVERNING THE PROCUREMENT

The Standard Conditions section contains statutory guidelines under which this RFP is issued, and conditions concerning how the project will be completed.

The Owner may evaluate the Proposals based on the anticipated completion of all or any portion of the Project. The Owner reserves the right to divide the Project into multiple parts, to reject any and all Proposals and re-solicit for new Proposals, or to reject any and all Proposals and temporarily or permanently abandon the Project, should the need arise. Owner makes no representations, written or oral, that it will enter into any form of agreement with any Offeror.

1. Protests

In accordance with Section 13-1-172 NMSA 1978, any Offeror who is aggrieved in connection with the solicitation of a contract or the award of a contract may protest to the Procurement Manager or his/her Designee. The protest must be submitted **in writing** within fifteen (15) calendar days after knowledge of the facts or occurrences giving rise to the protest to the Procurement Manager.

The protest letter shall include the name and address of the protestant, the solicitation number, and a statement of the grounds for protest, including appropriate supporting exhibits.

2. Incurring Cost

Any cost incurred by the Offeror in preparation, transmittal, or presentation of any proposal or material submitted in response to this RFP shall be borne solely by the Offeror.

3. Third-Party or Subcontracting GC Contract Responsibilities

Direction of all work that may result from this procurement must be performed by the Offeror and payments will only be made to the Offeror. Use of consultants identified in the proposal is permitted, but since the award is made on a quality-based evaluation process, reassignment of GC duties and responsibilities to a third party is not acceptable.

4. Amendments or Modifications to a Proposal by Offeror

Per 1.4.1.34 and 1.4.1.35 NMAC, an Offeror may request in writing to amend, modify or withdraw their proposal if the Procurement Manager makes a determination that it is in the best interests of the District and the Offeror to do so, prior to the date and time of the receipt of proposals. If the request is accepted to amend or modify a proposal, the Offeror shall replace the incorrect proposals with corrected proposals in their entirety. Substitution of random pages will not be allowed to avoid information being inserted or removed incorrectly. Any amendment or modification to an Offeror's proposal shall be documented for the procurement file.

5. Late Withdrawals or Late Modifications

Per 1.4.1.36, inclusive of 1.4.1.21 NMAC, submission of a request to withdraw or modify a proposal after the deadline, shall be documented, and shall not be considered unless the written request is received before contract award, and the request to submit, modify or withdraw the proposal would have been timely but for the action or inaction of the Procurement Manager and/or District personnel directly involved in the procurement.

Any of these occurrences shall be documented by the Procurement Manager, and all Offerors of record shall be notified of the event in writing as soon as possible.

6. Disclosure of Proposal Contents

The content of any proposal shall not be opened to public inspection or disclosed prior to award. At that time, all proposals will be open to the public, except for the material which has clearly been noted and determined by the Procurement Manager to be proprietary or confidential as noted by the Offeror.

7. Confidential Data

if a request is received for disclosure of data, for which an Offeror has made written request for confidentiality, the Procurement Manager shall make a determination that the data is, in fact, confidential and proprietary financial information concerning the Offeror's organization and whether or not the data qualifies as a trade secret under the Uniform Trade Secrets Act, Sections NMSA 1978 57-3A-7. Unless the Offeror takes legal action to prevent disclosure of data that does not meet the requirements of the Uniform Trade Secrets Act, the data will be so disclosed. After award the proposal shall be open to public inspections subject to any continuing prohibition on the disclosure of confidential data. Any pages of a proposal on which the Offeror has stamped or imprinted "proprietary" or "confidential" shall be readily separable from the proposal in order to facilitate public inspection for the non-confidential portion of the qualifications based proposal.

8. Termination

This RFP may be canceled at any time and any and all proposals may be rejected in whole or in part when the District determines such action to be in the best interest of the District and the State of New Mexico.

9. Sufficient Appropriation

Any contract awarded as a result of this RFP process may be terminated if sufficient appropriations or authorizations do not exist. Such termination will be effected by sending written notice to the contractor. The Owner's decision as to whether sufficient appropriations and authorizations are available will be accepted by the contractor as final.

If the determination is made that there is insufficient funding to continue or finalize a project, the successful Offeror will be compensated to the level of effort performed, as authorized by the Owner prior to that determination.

10. Offeror Qualifications

The Evaluation Committee may consider any relevant information or data, from any reliable source (references) relating to the RFP evaluation factors and the Offeror's ability to successfully perform the project. Such information may be obtained from the Offeror's prior customers, commercial and public databases or other reliable sources. The Selection

Committee may reject the proposal of any Offeror who is not a responsible Offeror or fails to submit a responsive offer as defined in Sections 13-1-83 and 13-1-85 NMSA 1978.

11. Right to Waive Minor Irregularities

The Selection Committee reserves the right to waive minor irregularities per 1.4.1.42 NMAC 2005 (see Definitions). The Selection Committee also reserves the right to waive mandatory requirements provided that all of the otherwise responsive proposals failed to meet the same mandatory requirements and the failure to do so does not otherwise materially affect the procurement. This right is at the sole discretion of the Selection Committee.

12. Notice

The New Mexico criminal statutes impose felony penalties for bribes, gratuities and kickbacks.

13. Release of Information

Only the Owner is authorized to release information about the project(s) covered by this RFP. The Offerors must refer to the Owner any requests to release any information that pertains to the work or activities covered by any action or award related to this RFP.

14. Project Reporting

In addition to the normal project meetings with the Owner, successful Offeror is required to work with the District Representative, the Project Architect, and the PSFA Regional Manager to ensure the project records are uploaded into the PSFA construction information management system. Training for use of this system will be provided by the PSFA training staff. If you have not been trained to use the construction information management system, please check the PSFA website at www.nmpsfa.org for training schedules and information as soon as possible.

15. New Mexico Prevailing Wage Rates

Wages to be paid as a result of a contract awarded for this project will be subject to the minimum wage rate determination by the State of New Mexico, and will be attached to the final contract documents. This determination will become part of the contract by reference and must be posted, per State of New Mexico Statutes, in a conspicuous place at the General Contractor's place of business. It is the General Contractor's responsibility to be aware of the applicable State of New Mexico statutes and responsibilities related thereto. Failure by the Owner to physically make such minimum wage rate determinations available to the General Contractor will not relieve the General Contractor from becoming aware of or complying with such determinations.

16. Clarifications from Offerors

The Procurement Manager may, at the request of a Selection Committee designee request clarifications on information submitted by any and all Offerors.

17. Licensing Requirements

The Contractor and subcontractors shall comply with all licensing regulations and the Contractor shall provide copies of all valid licenses necessary to perform the work in the State of New Mexico.

18. Subcontractors

The Subcontractors Fair Practices Act, 13-4-31 et. seq. per NMAC 1.4.8.13, para. C applies to this procurement. Therefore, any request for substitution on the part of the Owner or the Offeror shall comply with this section.

III. RFP RESPONSE FORMAT AND ORGANIZATION

A. NUMBER OF RESPONSES

General Contractors shall only submit one offer. See Paragraph B for the number of copies of the offer required. Multiple offers by one General Contractor are not allowed. Please note that the Procurement Manager, after award, shall retain the original Technical Proposal and Price Proposal for the procurement file as a matter of record.

NOTE: SUBMIT Original Price Proposal with the original Technical Proposal. It shall be submitted in a clearly marked sealed envelope easily removable from the Technical Proposal.

B. NUMBER OF COPIES OF RESPONSES

In addition to the Original Technical Proposal and Price Proposal submittal, Offerors shall provide **five (5)** identical copies of the proposals for the Evaluation Committee and **one (1)** digital, identical copy of the proposal on a USB Flash Drive in PDF format.

After award of a contract, all Offerors of record may make arrangements with the District to have their proposal copies returned or picked up. The District shall not be responsible for any shipping or mailing costs to return copies of the proposals.

C. SUBMISSION OF PROPOSAL

Hand Carried: Proposals may be hand carried/delivered. If requested, the District may give the person delivering the proposal package a receipt that notes the firm name, date and time the proposal was delivered for the Offeror files.

Common Carrier or USPS: Offers may be shipped/mailed by common carrier or courier. Be advised that the District is not responsible for offers that are not received timely. It is solely the responsibility of the Offeror to ensure the submittal arrives on time at the location state herein.

No Other Methods of Offer Delivery Allowed: Telephone, telegraphic, facsimile or electronic offers will NOT be accepted.

D. GENERAL RESPONSE INSTRUCTIONS AND INFORMATION

1. Proposals shall be prepared SIMPLY AND ECONOMICALLY, providing straightforward, CONCISE description of the respondent's ability to meet the requirements of this RFP. Emphasis shall be on the completeness, clarity of content, responsiveness to the requirements, and an understanding of the owner's needs.
2. Respondents shall carefully read the information contained in this RFP and submit a complete response to all requirements and questions as directed. Incomplete Proposals will be considered non-responsive and subject to rejection.
3. Offerors shall prepare and develop proposals at the sole expense of the Offeror.

4. Proposals that are qualified with conditional clauses, alterations, items not called for in the RFP documents, or irregularities of any kind are subject to rejection by the Owner. Questions regarding the procurement process, the RFP documents, general requirements, terms and conditions, etc. must be submitted in writing prior to the submission of Proposal for clarification purposes.
5. If your proposal contains proprietary/confidential information, you shall stamp those pages so that they are easily identifiable by the Procurement Manager. Those pages shall be examined and a written determination shall be made that specifies which portions of the proposal may not be disclosed. If the Offeror disagrees, they are entitled to take legal action to prevent the disclosure.
6. Proposals shall consist of answers to questions or requirements identified in the RFP. It is not necessary to repeat the question in the Proposals; however, it is essential to reference the question number with the corresponding answer.
7. All amendments and addenda shall be acknowledged on the Price Proposal Form where designated.

VOLUME I – TECHNICAL PROPOSAL

A. Technical Proposal Format

Proposals may be submitted in a spiral or three-ring binder. Page format shall include 8-1/2" x 11" paper and 11" x 17" foldout sheets in size. Foldout pages shall be counted as two pages and shall be numbered as such. Text will be no smaller than 10 point. If there are any questions regarding format requirements, please contact the Procurement Manager prior to submission.

Proposals shall not exceed 30 pages total for the tabbed sections 3, 4, 5, 6 and 7 (tabbed Section 2A & 2B, Contractor and Subcontractor Questionnaire Attachments, shall be not be counted in the total pages described herein). Each sheet face that is printed with text or graphics counts as one page. Tab dividers do not count as pages provided the only text or graphics on the divider are the tab number and section title.

Offerors are cautioned to please keep the required documents/attachments in each category to concise, easily readable and applicable information.

B. Tabs/Evaluation Categories:

All sections shall be separated by a numbered tab that corresponds to the Evaluation Category, 1 through 6, described below.

TAB 1. SIGNED LETTER OF SUBMITTAL AND MANDATORY FORMS

00 334 Subcontractor Qualifications Statement Listing Form

00 4336 Subcontractor Listing Form w/Registration Number and Anti-Trust signatures (before contract is signed)

Valid Preference Certificate for one of the following: NM Resident Business

**Certificate, Native American Resident Business Certificate, Resident Veteran
Business Certificate, or Native American Resident Veteran Business Certificate
Campaign Contribution Form**

TAB 1. Letter of Submittal Requirements

Each proposal must be accompanied by a submittal letter. **Any submittal letter that omits any of the following information may be deemed ‘non-responsive’.** The submittal letter shall include acknowledgments and where appropriate, certification of the following:

1. Identify the name(s), title(s), telephone number(s), fax number(s) and e-mail address(es) of the person or persons who have authority to sign documents and who has sufficient knowledge to fully address all matters and respond to all inquiries included in the RFP submittal.
2. If a joint proposal is being submitted, identify the firm, and disclose the work/services to be executed by the nonresident contractor as a percentage of the total amount of the Price Proposal. The resident, Native American contractor, veteran, Native American veteran contractor, preference will be apportioned to the technical, price, and interview (if held) scores based on the percentage of work being performed by the in-state Offeror minus the out-of-state Offeror’s percentage of the work.
3. Acknowledge acceptance of all conditions that govern the procurement.
4. Acknowledge that the information provided in the proposal is truthful, accurate and complete, and that the firm is bound by all information, data, certifications, disclosures and attachments submitted.
5. Acknowledge that the omission of any material fact concerning requested information, or the submission of any material false or misleading statement, or misrepresentation of a material fact concerning any requested or submitted information, may deem the proposal ‘non-responsive’.
6. Acknowledge that the Owner has a right to obtain relevant information from other sources (references) to determine that the Offeror is ‘responsible’.
7. Acknowledge that if awarded the contract, the RFP documents, all terms and conditions stated herein, all information, data, certifications, disclosures and addendum shall be a part of the Contract.
8. Statement/Certification and/or documentation that the firm possesses the necessary equipment, financial resources, technical resources, management, professional and craft personnel resources and other required capabilities to successfully perform the contract, or will achieve same through its prelisted subcontractors with supporting information, pictures, diagrams, reports, etc.
9. Letter of Submittal shall be signed by a person or persons identified in Paragraph 1 of this section, who is/are fully authorized to contractually obligate the firm, and who has

sufficient knowledge to fully address all matters and respond to all inquiries including the RFP submittal.

TAB 2A & 2B. GENERAL CONTRACTOR & SUBCONTRACTOR QUALIFICATIONS

NOTE: The attachments to this section are in addition to, and are not counted in the 30 pages allowed per Section IV, Volume I, Technical Proposal, Paragraph A for Tabs 3, 4, 5, 6 and 7.

TAB 2A. GENERAL CONTRACTOR QUALIFICATIONS STATEMENT SUMMARY

1. Firm name and address, type of organization, years in business, other names business may have operated under.
2. Licensing Information.
3. Experience completing three (3) or more educational facilities, addition and/or renovation project of similar complexity totaling 41,000 square feet or more since **the year 2019** as the proposed project – List a maximum of 5 Projects (Projects will be described in detail in Attachment A of the Contractor Qualification Statement).
4. Key Personnel Experience.
5. Capacity and Capability to Perform the Work.
6. Surety Name and Bonding information.
7. Safety Information.
8. Insurance Claims and History.
9. Quality Assurance.
10. Project Scheduling.
11. Labor Code Violations.
12. Judgments/Breach of Contract.
13. Contractor Comments/Other Information.

TAB 2A. GENERAL CONTRACTOR ATTACHMENTS

Attachment A: Project Experience of Similar Complexity and Scope/Qualifications

Provide maximum of 5 examples:

- a. Experience on Similar projects totaling 41,000 square feet since 2019
- b. Project execution
- c. Customer satisfaction

Attachment B: Resumes for Project Manager, Superintendent, Safety, other key personnel

Attachment C: Organizational Chart of Project Management Team

Attachment D: Projects currently under construction totaling 41,000 square feet.

Attachment E: Notarized declaration of surety

Attachment F: ONE (1) Copy of Firm’s written safety plan

Attachment G: Letter from Insurance Carrier on their letterhead

Attachment H: Written Assurance Program

Attachment I: Affidavit of non-violation of Labor codes

Attachment J: Judgments/Breach of Contract/Protests

TAB 2B. SUBCONTRACTOR QUALIFICATION STATEMENT SUMMARY

Note: The attachments to this section are in addition to, and do not count toward the 30 pages allowed per Section IV, Volume I, Technical Proposal, Para. A for Tabs 3, 4, 5 and 6.

Per NMAC 1.4.8 RFP for Construction and Facility Maintenance, Services and Repairs, Para. 1.4.8.12, subparagraph D (2), the value of the subcontractors’ work that meets the listing threshold state below shall submit a Qualifications Statement:

“Subcontractor Qualification Statements. Subcontractor qualification statements shall be required for all subcontractors identified in the technical proposal pursuant to the subcontractor listing requirements 1.4.8.13 NMAC, where the value of the subcontract is fifty thousand (\$50,000) or five percent (5%) whichever is greater. A using agency MAY reserve the right to require subcontractor qualification statements from any other subcontractors, at whatever tier and regardless of the value of the subcontract.”

1. Offeror Information.
2. Licensing.
3. Experience completing one or more facilities over 41,000 square feet since 2019
List a maximum of 3 projects.
4. Key Personnel.
5. Capacity and Capability.
6. Safety.
7. Insurance and Claims History.
8. Quality Assurance.
9. Labor Code Violations.
10. Subcontractor Comments.
11. Other Information.
12. Provide certification and/or documentation that the firm possesses the necessary equipment, financial resources, technical resources, management, professional and craft personnel resources and other required capabilities to successfully perform the contract, or will achieve same through its prelisted subcontractors.

TAB 2B. SUBCONTRACTOR ATTACHMENTS

Attachment A: Project Experience of Similar Complexity and Scope/Qualifications

Provide maximum of 3 examples.

Attachment B: Resumes for Project Manager, Superintendent, other key personnel

Attachment C: Similar Projects

Attachment D: Written Safety Plan

Attachment E: Written Quality Assurance Program

Attachment F: Affidavit of non-violation of Labor codes

Attachment G: Judgments/Breach of Contract, Mediations & Arbitrations

Attachment H: Subcontractor Comments/Other Information

Attachment I: Certify and/or document firm possesses necessary equipment, financial resources, technical resources, management, professional and craft personnel resources and other required capabilities to successfully perform the contract

TAB 3. PAST PERFORMANCE

Please provide the following information:

- A. Capability to meet schedules, budgets and project administration requirements for past projects listed in Attachment A:
1. Were any of the projects completed early? If yes, identify the project(s) and describe how this was accomplished.
 2. Were any of the projects completed late? If yes, identify the project, how many days late, and the reason(s) why the completion date was delayed.
 3. How many days after Substantial Completion were required to complete the punch list items on each project listed.
 4. Was your firm or your subcontractors called back to any of the projects listed for any reason during the warranty period? After the warranty period?
 5. Were there any outstanding issues remaining after the warranty inspection on any of the projects you've listed?
 6. Did your firm, for any reason, refuse to do additional work required by the Owner? If yes, identify the project and state the reason(s) why.
 7. What was your firm's process for vetting the pricing from your subcontractors and suppliers on change orders in order to ensure fair pricing to the Owner?
 8. What was the dollar threshold below which your firm absorbed additional cost changes in order to avoid disproportionate administrative costs for all parties? Give examples of the changes on the project listed for which your firm absorbed the costs.
- B. Describe the role of each teaming partner on the contract.
- C. Evidence of past performance quality and overall customer satisfaction.
- D. Record of compliance with applicable laws and regulations on past projects.

E. Past record of achievement of health and safety targets.

TAB 4. PROJECT STAFFING

Please provide the following information:

- A. Brief resume (education, professional certification(s), years with firm, total years of experience, and a brief description of experience supporting the proposed role) for key project personnel to be assigned to this project.
- B. Address the extent to which key personnel have worked together as a team on project of similar or greater magnitude and on projects of the same nature. Provide a matrix that lists key staff names across the top of the matrix and list past projects down the side of the matrix. The project list should begin with all of the projects that appear in Item 3.a of the General Contractor's Statement of Qualifications. The project list may also include up to five more projects that demonstrate how the key personnel have worked together as a team. At each intersection within the field of the matrix, list the role that the person filled on that particular project (such as Project Manager Site Superintendent, Safety Manager, QA/QC Manager, Estimator, etc.).
- C. Describe Contractor's and subcontractors' participation in skill training.
- D. Address reliable staffing sources/project staffing.

TAB 5. MANAGEMENT PLAN

Provide a brief narrative of the approach to the following issues as they pertain to this project:

Management Team: Provide an organizational chart of the Management Team and address how critical subcontractors were selected and will be managed.

- A. Describe how the construction will be organized, managed, and administered to meet the project requirements, including security and safety controls, staging areas, delivery routes, crane locations and interfaces required at the site with the using agency.
- B. Describe the technical approach to the project that is intended to ensure that tasks are executed within cost, schedule and quality goals.
- C. Provide a proposed project schedule. Indicate critical dates and other information in sufficient detail for the Evaluation Committee to determine if time frames are reasonable.
- D. Provide information regarding your firm's ability to deliver the project within the allotted construction time.

TAB 6. HEALTH AND SAFETY

Please provide the following information:

- A. Provide a summary description of the General Contractor's Health and Safety management system.

NOTE: One copy only of the full General Contractor’s written Safety Plan is required as Attachment F of the General Contractor Statement of Qualifications.

- B. Identify the competent person responsible for, and capable of, implementing the safety and health program/plan.
- C. Address the project specific health and safety risks that have been identified by the RFP and additional risks that the Offeror’s team has identified. Describe processes to minimize risk and to ensure that health and safety issues are clearly communicated with the Contractors, Subcontractors, and the Owner.

(See Section V.B. Evaluation Criteria below for detailed scoring guidelines for the ‘Health and Safety’ category).

TAB 7. NEW MEXICO PRODUCED WORK- NOT APPLICABLE to this RFP

Indicate the volume of work by percentage to be produced by New Mexico firms, using New Mexico based employees on this project. Indicate the number of New Mexico based employees that will be a part of the project team.

(See Section V.B Evaluation Criteria below for detailed scoring guidelines for the New Mexico Produced Work” category).

NOTE REGARDING TABS 3, 4, 5, 6 AND 7:

There may be a duplication of required information on Attachments of the General Contractor Statement of Qualifications and other sections of the Technical Proposal. The purpose of Tabs 4, 5, 6, and 7 is to allow the Offeror the ability to present more concise information regarding the strengths of the proposed team, and to identify information that the Selection Committee can use for scoring. If the Offeror so chooses, other sections of the Technical Proposal may be referenced within these Tabs, without wholly duplicating information provided. Also, information presented elsewhere may be summarized or condensed within these Tab sections to make the Offeror’s proposal more clear.

VOLUME 2. PRICE PROPOSAL

(Provide One Original Copy of Below Information in Separate Sealed container. Price Proposal Form is included in Div. 00 of the Project Manual)

- 1. PRICE PROPOSAL AMOUNT**— use the Lump Sum Proposal form provided in the project manual. Price *shall not* include NM Gross Receipts Tax. However, the GRT will be added to the contract.

NOTE: If a joint proposal is being submitted, be sure you have stated the % of the work/services that will be performed by the nonresident contractor stated, based on the dollar amount of the Price proposed and include your valid in-state preference number assigned by NM Taxation and Revenue on the Proposal Form. Copies of your certificate shall be included in the Technical Proposal, so the preference points are considered and applied correctly.

- 2. ANY ALTERNATES OR BID LOTS LISTED** must be clearly identified by cost.
- 3. STATE OF NEW MEXICO W-9**
- 4. AGENT'S AVIDAVIT**
- 5. PROPOSAL BOND**
- 6. CERTIFICATE OF INSURANCE**
- 7. POWER OF ATTORNEY**
- 8. LICENSES, PREFERENCE, REGISTRATION, AND ANY OTHER NUMBERS REQUIRED ON THE PROPOSAL FORM**

IV. PROPOSAL EVALUATION

A. EVALUATION PROCESS AND SCORING METHODOLOGY

1. Receipt and Opening of Proposals

Proposals received prior to or at submission shall be time-stamped upon receipt and the Price Proposal shall be separated from the Technical Proposal and held in a secure place until the Evaluation Committee has scored the Technical Proposal. Proposals shall not be opened publically and shall not be open to public inspection until the contract for construction is signed by the successful Offeror.

2. Evaluation Committee

The Evaluation Committee shall consist of a minimum of three (3) persons, but no more than five (5) persons appointed by the Owner that possess expertise in the technical requirements of the project, construction design and contracting. The Owner may use independent consultants or agents to support the Committee, provided appropriate precautions are taken to avoid potential conflicts of interest.

3. Technical Proposal

The Procurement Manager shall review each proposal to determine if it meets all of the mandatory requirements. Proposals that do not meet the mandatory requirements may be considered “nonresponsive”. The Procurement Manager reserves the right to contact an Offeror to clarify contents of any Technical Proposal.

Any Offeror whose proposal is determined to be non-responsive shall be notified in writing of the determination as soon as possible. The Procurement Manager will then distribute the proposals and individual score sheets to the Evaluation Committee, and review evaluation criteria.

4. Price Proposal

Price Proposals shall be evaluated on the basis of the numerical weight assigned below and as well as the NM, Native American resident/veteran, contractor, law. The regulatory scoring process permits the scoring of competing Offeror’s price proposals in relation to one another: The Offeror with the lowest price shall receive the maximum price score, i.e., the maximum numerical weight assigned to the price below. The price score of each other Offeror shall be determined by applying the following mathematical formula: price of lowest Offeror divided by the price for this Offeror multiplied by the maximum price score:

$$\frac{\text{Price of lowest Offeror}}{\text{Price of this Offeror}} \times \text{maximum price score} = \text{price score this Offeror}$$

The Evaluation Committee members shall score the technical proposals individually. Those individual scores will then be combined with the price proposal score and converted to a numeric ranking of all proposals per committee member. The individual member rankings per Offeror will then be totaled and averaged to determine the overall

ranking of proposals. The Committee will then determine whether or not to conduct interviews based on the final ranking.

5. Resident Contractor Preference and Resident Veteran Contractor Preference

To ensure adequate consideration and application of NMSA 1978, § 13-1-21 (as amended), Offerors must include a copy of their valid preference certificate in their proposal. Invalid or expired certificates will not be accepted. An expired certificate currently in the process of renewal will not be considered valid. Certificates for preferences must be obtained through the New Mexico Department of Taxation and Revenue: <http://www.tax.newmexico.gov/Businesses/in-state-veteran-preference-certification.aspx>

New Mexico preferences are: the New Mexico Resident Business Preference, the New Mexico Native American Resident Business Preference, the New Mexico Resident Veteran Business Preference, and the New Mexico Native American Veteran Business Preference.

An Offeror cannot be awarded multiple preferences. The District shall award a business only one of the following preferences: New Mexico Resident Business Preference, New Mexico Native American Resident Business Preference, New Mexico Resident Veteran Business Preference, and New Mexico Native American Veteran Business Preference.

Resident business, resident veteran business, resident contractor, resident veteran contractor, Native American resident business or the Native American resident veteran business shall, if they meet the requirements set forth in New Mexico Procurement Code Sections 13-1-21, 13-1-22 NMSA 1987, if their proposal was submitted under a formal request for proposal process, and the contract is to be awarded based on a point-based system, be afforded preference in the form of additional points equivalent to eight percent (8%) of the total possible points for resident business/contractors, and additional points equivalent to ten percent (10%) of the total possible points for resident veteran business/contractors.

The New Mexico preferences shall not apply when the expenditures for this RFP include Federal Funds.

In no event will a business be awarded both a resident business preference and a resident veteran business preference in any single procurement/contractual action.

The preference calculation formula shall be applied to each Offeror on the Procurement Manager's Master Score/Rank sheet that has a valid preference number issued by the NM Taxation and Revenue Department.

6. Proposal Discussions

Per 1.4.1.39 NMAC 2005, if mistakes are discovered after receipt of the proposal, The Evaluation Committee may request clarifications of information submitted by any or all Offerors in a written format with a specified deadline for response.

Short-listed Offerors shall be accorded fair and equal treatment with respect to any clarifications of proposals. If during discussions there is a need for any substantial clarification of or change in a RFP, the RFP shall be amended to incorporate such clarification or change. Any substantial oral clarification of a proposal shall be reduced to writing by the short-listed Offeror.

NOTE: Except for circumstances and situations otherwise approved by the Procurement Manager, negotiations of the relevant terms and conditions as well as any other important factors in an RFP and proposed contract are negotiated **PRIOR TO AWARD OF A CONTRACT, NOT AFTER AWARD.**

7. Interviews:

If interviews are held, the Evaluation Committee shall score each question, and the total points shall be translated to a rank. Each interview question shall have the same weight. Example: If the Interview is worth 50 points, and you have 5 questions, each question shall be worth 10 points. The same questions will be issued to each short listed firm as a benchmark for evaluation purposes. Each question may lead to other questions to help clarify and better understand the firm’s capabilities, which may be considered in scoring the interview.

Interview points shall be added to the Technical Proposal and Price Proposal and re-calculated to determine the final overall rank of Short-listed Offerors for recommendation for award of a contract.

8. Short-Listed Offeror Withdrawal from Interview:

A short-listed firm may withdraw their proposal if they determine that cannot improve their position if interviews are held. This event shall be documented for the procurement file, and a notice shall be sent to all Offerors of record of the event. If the next ranked firm is invited to interview, their final points/rank for their Technical/Price evaluation does not change.

B. EVALUATION CRITERIA:

The criteria below aligns with the 1.4.8 NMAC 2007 Rules that govern the process.

VOLUME 1. TECHNICAL PROPOSAL

TAB 1. LETTER OF SUBMITTAL	Mandatory
00 4334 Sub Qualifications Statement Listing Form	
00 4336 Subcontractor/WFS#/Anti-Trust Listing Form	
NM Resident Business Certificate, Native American Resident Business Certificate, Resident Veteran Business Certificate, or Native American Resident Veteran Business Certificate	
Campaign Contribution Form	

TAB 2A. GENERAL CONTRACTOR QUALIFICATIONS STATEMENT 05 POINTS

- a. Written Safety Program Compliant, Provide 1 copy
- b. List of key safety personnel/safety manager for this project
- c. Modification rate for past 5 years
- d. Recordable incident rate for past calendar year
OSHA 300 Log
- e. Free of committing serious/willful violation of
Federal/State safety laws

TAB 2B. SUBCONTRACTOR QUALIFICATIONS STATEMENT 05 POINTS

- a. Written Safety Program Compliant; Provide 1 copy
- b. Experience Modification Rate past 5 Years
- c. Recordable Incident Rate for past calendar year
OSHA 300 log
- d. Free of committing serious/willful violations
Of Federal/State safety laws

TAB 3. PAST PERFORMANCE 10 POINTS

- a. Budget & Schedule Data
(See III Response Format, Technical Proposal, Tab 3, questions 1-8)
- b. Performance quality and overall customer satisfaction if available
- c. Compliance with Applicable Laws & Regulations
- d. Safety Performance Record

TAB 4. MANAGEMENT PLAN 10 POINTS

- a. Reliable Staffing Sources/Project Staffing
- b. Management Team/Selection of Subcontractors
- c. Organization construction tasks/security/safety/staging areas
- d. Technical approach to meet costs/schedule/quality
- e. Project Schedule/critical dates
- f. Project plan for completion on time

TAB 5. PROJECT STAFFING/CRAFT LABOR CAPABILITIES 10 POINTS

- a. Management Team resumes, experience
- b. Team members experience in this project team role
- c. Proposed team prior working relationships on other projects
- d. GC and proposed subcontractor skill training
- e. Project Schedule

TAB 6. HEALTH AND SAFETY 10 POINTS

- a. Summary description of Health & Safety Plan
- b. One Full Copy of Written Safety Plan
- c. Competent Person Responsible/Capable of Implementing
- d. Project Specific Health/Safety Risks
- e. Describe processes to clearly communicate Health/Safety risks

TECHNICAL PROPOSAL POINTS 50

VOLUME 2. PRICE PROPOSAL

PRICE PROPOSAL FORM (Amount stated to be translated to points) 50 POINTS

TOTAL POINTS 100

INTERVIEWS, IF HELD 50 POINTS

GRAND TOTAL 150 points

C. CAMPAIGN CONTRIBUTION DISCLOSURE FORM

Note: Submit with Transmittal Letter/Technical Proposal

Pursuant to NMSA 1978, § 13-1-191.1 (2006), any person seeking to enter into a contract with any state agency or local public body for professional services, a design and build project delivery system, or the design and installation of measures the primary purpose of which is to conserve natural resources must file this form with that state agency or local public body. This form must be filed even if the contract qualifies as a small purchase or a sole source contract. The prospective contractor must disclose whether they, a family member or a representative of the prospective contractor has made a campaign contribution to an applicable public official of the state or a local public body during the two years prior to the date on which the contractor submits a proposal or, in the case of a sole source or small purchase contract, the two years prior to the date the contractor signs the contract, if the aggregate total of contributions given by the prospective contractor, a family member or a representative of the prospective contractor to the public official exceeds two hundred and fifty dollars (\$250) over the two year period.

Furthermore, the state agency or local public body shall void an executed contract or cancel a solicitation or proposed award for a proposed contract if: 1) a prospective contractor, a family member of the prospective contractor, or a representative of the prospective contractor gives a campaign contribution or other thing of value to an applicable public official or the applicable public official's employees during the pendency of the procurement process or 2) a prospective contractor fails to submit a fully completed disclosure statement pursuant to the law.

THIS FORM MUST BE FILED BY ANY PROSPECTIVE CONTRACTOR WHETHER OR NOT THEY, THEIR FAMILY MEMBER, OR THEIR REPRESENTATIVE HAS MADE ANY CONTRIBUTIONS SUBJECT TO DISCLOSURE:

The following definitions apply:

“Applicable Public Official” means a person elected to an office or a person appointed to complete a term of an elected office, who has the authority to award or influence the award of the contract for which the prospective contractor is submitting a competitive sealed proposal or who has the authority to negotiate a sole source or small purchase contract that may be awarded without submission of a sealed competitive proposal.

“Campaign Contributions” means a gift, subscription, loan, advance or deposit of money or other thing of value, including the estimated value of an in-kind contribution, that is made to or received by an applicable public official or any person authorized to raise, collect or expend contributions on that on that official's behalf for the purpose of electing the official to either statewide or local office. “Campaign Contributions” includes the payment of a debt incurred in an election campaign, but does not include the value of services provided without compensation or unreimbursed travel or other personal expenses of individuals who volunteer a portion or all of their time on behalf of a candidate or political committee, nor does it include the administrative or solicitation expenses of a political committee that are paid by an organization that sponsors the committee.

“Family Member” means spouse, father, mother, child, father-in-law, mother-in-law, daughter-in-law or son-in-law.

“Pendency of the Procurement Process” means the time period commencing with the public notice of the request for proposals and ending with the award of the contract or the cancellation of the request for proposals.

“Person” means any corporation, partnership, individual, joint venture, association or any other private legal entity.

“Prospective contractor” means a person who is subject to the competitive sealed proposal process set forth in the Procurement Code or is not required to submit a competitive sealed proposal because that person qualifies for a sole source or a small purchase contract.

“Representative of a prospective contractor” means an officer or director of a corporation a member or manager of a limited liability corporation, a partner of a partnership or a trustee of a trust of the prospective contractor.

DISCLOSURE OF CONTRIBUTIONS:

(Note: If you have made more than one contribution, please attach a list of the public officials you have contributed to following the format and attach the list to this document. Please write “see attached” in the blank below.)

Contribution Made By:

Relation to Prospective Contractor:

Name of Applicable Public Official on the District Board of Education:

(Note: List Board of Education Member(s) here)

Date Contribution(s) Made:

Amount(s) of Contribution(s):

Nature of Contribution(s):

Purpose of Contribution(s)

(Attach extra pages if necessary)

Signature

Date

Title (position)

--OR--

NO CONTRIBUTIONS IN THE AGGREGATE TOTAL OVER TWO HUNDRED FIFTY DOLLARS (\$250) WERE MADE to an applicable public official by me, a family member or representative.

Signature

Date

Title (position)

INSTRUCTIONS TO BIDDERS

Section 00 2113

1.0 DEFINITIONS AND TERMS

1.1 Terms used in these Bidding Documents which are defined in the Instructions to Bidders and in the Conditions of the Contract for Construction (General, Supplementary, and Other Conditions) have the meanings assigned to them in those documents.

- A. ADDENDUM:** A written or graphic instrument issued prior to the opening of Bids which clarifies, corrects, or changes the Bidding Documents or Contract Documents. Plural: addenda.
- B. ALTERNATE BID:** If requested by the Bidding Documents, the Amount to be added to the Base Bid if the corresponding change in the project scope, materials, and/or methods of construction is awarded by the Owner.
- C. BASE BID:** Amount stated in the Bid as the sum for which the Bidder offers to perform the work, excluding alternate Bids.
- D. BID:** The offer of the bidder submitted on the prescribed form setting forth the prices for the work to be performed in conformance with the Bidding Documents.
- E. BID LOT:** A major item of work for which a separate quotation or proposal is requested.
- F. BIDDER:** One who submits a Bid directly to the Owner, as distinct from a subcontractor who submits a bid to a contractor.
- G. BIDDING DOCUMENTS:** The Bidding Requirements and the Contract Documents.
- H. BID FORM:** A form which includes a specific space in which the bid price shall be inserted and which the Bidder shall sign and submit along with all other necessary submissions. A Bidder may submit a reasonable facsimile of the Bid Form. - Bids received by facsimile or in electronic format will not be accepted.
- I. BIDDING REQUIREMENTS:** Notice of Invitation to Bid, Prebid Information, Instructions to Bidders, Information Available for Bidders, the Bid Form, Supplements to the Bid Form, and portions of Addenda relating to any of these.
- J. DAY:** Day shall mean calendar day unless defined otherwise.
- K. INVITATION FOR BID:** All documents including those attached or incorporated by reference or utilized for soliciting sealed bids.
- L. RESPONSIBLE BIDDER:** A Bidder who is properly licensed in accordance with the Construction Industries Licensing Act and submits a Responsive Bid and who has furnished, when required, information and data to prove that his financial resources, production or service facilities, personnel, service reputation, and experience are adequate to make satisfactory delivery of the services, construction, or items of tangible personal property described in the Invitation for Bid.
- M. RESPONSIVE BID:** A bid which conforms in all material respects to the requirements set forth in the Invitation for Bid.
- N. SUCCESSFUL BIDDER:** The lowest Responsible Bidder to whom the Owner, on the basis of the Owner's evaluation, makes an award. A Successful Bidder does not become the contractor until an agreement with the Owner is signed.

2.0 EXAMINATION OF BIDDING DOCUMENTS AND SITE

2.1 Before submitting a Bid, each Bidder must, in accordance with the General Conditions with special attention to Article's 1 and 3.:

- A.** Examine the Bidding Documents thoroughly;
- B.** Visit the site to familiarize himself with local conditions that may in any manner affects cost, progress, or performance;
- C.** Familiarize himself with Federal, State, and local laws, ordinances, rules, and regulations that may in any manner affect cost, progress, or performance of the Work; and
- D.** Study and carefully correlate the Bidder's observations with the Bidding Documents.

2.2 On request, the Owner will provide each Bidder access to the site to conduct such investigations and tests as each Bidder deems necessary for submission of his Bid.

2.3 The lands upon which the Work is to be performed, rights-of-way for access thereto, and other lands designated for use by the Contractor in performing the work are identified in the Bidding Documents.

2.4 The submission of a Bid will constitute an incontrovertible representation by the Bidder that he has complied with every requirement of this Section and that the Bidding Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work.

3.0 BIDDING DOCUMENTS

3.1 COPIES OF BIDDING DOCUMENTS

3.1.1 Complete sets of the Bidding Documents in the number and for the deposit sum, if any, stated in the Invitation may be obtained from the Design Professional (unless another issuing office is designated in the Invitation for Bid). The deposit will be refunded to Bidders who submit a bona-fide bid and return the bidding Documents in good and complete condition within fifteen (15) calendar days after opening of Bids.

3.1.2 Complete sets of Bidding Documents shall be used in preparing bids; neither the Owner nor the Design Professional assumes responsibility for errors or misinterpretations resulting from the use of incomplete or partial Bidding Documents.

3.1.3 The Owner and Design Professional, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids on the Work and do not confer a license or grant for any other use.

3.2 INTERPRETATIONS

3.2.1 All questions about the meaning or intent of the Bidding Documents shall be submitted to the Design Professional in writing. Replies will be issued by Addenda and mailed or delivered to all parties recorded by the Design Professional as having received the Bidding Documents. **Questions received less than seven (7) days prior to the date for opening of Bids will not be formally answered.** Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

3.2.2 Bidders and Subcontractors shall promptly notify the Design Professional of any ambiguity, inconsistency, or error which they may discover upon examination of the Bidding Documents or of the site and local conditions.

3.3 SUBSTITUTE MATERIAL AND EQUIPMENT

The contract, if awarded, will be on the basis of material and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or-equal" items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "**or-equal**" item of material or equipment may be furnished or used by the contractor if acceptable to the Design Professional, application for such acceptance will not be considered by the Design Professional unless submitted to the Design Professional with a detailed itemized comparison of the proposed substitution against the specified product at least **ten (10) days prior to the date for opening Bids**. Any product with a 5 (five) year or greater extended warranty must be submitted no less than **forty-five (45) days prior to the opening of Bids, along with the same itemized comparison, to be considered by the Design Professional**. Any allowance of substitutions will be published to all prospective Bidders via addendum. The procedure for submittal of any such application by the Contractor and consideration by the Design Professional is set forth in the Contract Documents.

3.4 ADDENDA

3.4.1 Addenda will be mailed or delivered to all who are known by the Design Professional to have received a complete set of Bidding Documents.

3.4.2 Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for that purpose.

3.4.3 Addenda will be issued no later than four (4) days prior to the date for receipt of Bids, except an addendum withdrawing the request for bids or one which includes postponement of the date for receipt of Bids.

4.0 BIDDING PROCEDURES

4.1 FORM AND STYLE OF BIDS

4.1.1 Bids shall be submitted on forms identical to the form included with the Bidding Documents.

4.1.2 All blanks on the Bid Form shall be filled in by typewriter or manually in ink.

4.1.3 Where so indicated by the makeup of the Bid Form, sums shall be expressed in both words and figures, and, in case of discrepancy between the two, the amount written in words shall govern.

4.1.4 Any interlineation, alteration, or erasure must be initialed by the signer of the bid.

4.1.5 All requested Additive Alternate Bids shall be bid. If no change in the Base Bid is required, enter "No Change." Deductive Alternates shall not be used.

4.1.6 Where there are two or more major items of work (identified as "Bid Lots") for which separate quotations are requested, the Bidder may, at his discretion, submit quotations for any or all items, unless otherwise specified. Additionally, the Bidder may submit a lump sum price for all lots for which the Bidder has submitted separate quotations.

4.1.7 Each copy of the bid shall include the complete name of the Bidder and a statement that the Bidder is a sole proprietor, a partnership, a corporation, or some other legal entity. Each copy shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further give the State of incorporation and have the applicable New Mexico Certificate of Incorporation number or Certificate of Authority number. The Bid shall include the current contractor's license number and type, Department of Workforce Solutions Minimum Wage Act registration number (DWS#), and the current Contractor's preference number. A bid submitted by an agent shall have a current Power of Attorney attached certifying the agent's authority to bind the Bidder.

4.1.8 The Bid shall contain an acknowledgment of receipt of all Addenda (the numbers of which shall be filled in on the Bid Form).

4.1.9 The address to which communications regarding the Bid are to be directed must be shown.

4.1.10 The Project Name and Number, as well as the Invitation to Bid Number, shall be clearly shown on the outside of the envelope in which the sealed Bid is submitted.

4.2 BID SECURITY

4.2.1 Bid security in an amount equal to at least five percent (5%) of the amount of the Bid shall be a bond provided by a surety company authorized to do business in this State, or the equivalent in cash, a cashier's check, or otherwise supplied in a form satisfactory to the Owner (Section 13-1-146, NMSA 1978) and approved in writing by the Owner in advance. All General Contractor, or Primary Contractor, or Construction Manager at Risk Bonds shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies," as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, United States Treasury Department.

4.2.2 The bid security shall be in the amount of five percent (5%) of the highest Bid amount submitted, unless otherwise stipulated, pledging that the Bidder will enter into a Contract with the Owner on the terms stated herein and will furnish bonds covering the faithful performance of the Contract and payment of all obligations arising there under. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty.

4.2.3 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until:

- A. the Contract has been executed and bonds have been furnished,
- B. the specified time has elapsed so that Bids may be withdrawn, or
- C. all Bids have been rejected.

4.2.4 When the Bidding Documents require bid security, noncompliance by the Bidder requires that the Bid be rejected (13-1-147A, NMSA 1978).

4.2.5 If a Bidder is permitted to withdraw his Bid before award, no action shall take place against the Bidder or the bid security (13-1-147B, NMSA 1978).

4.2.6 The Owner may reduce bid security requirements authorized by the Procurement Code (13-1-28 to 13-1-199, NMSA 1978) to encourage procurement from small businesses. Reduction, if any, and the manner thereof will be stipulated in Paragraph 7. Reduction of the amount of bid security, if any, shall in no way reduce requirements for Performance, Payment, or other Bonds referenced in the Bidding Documents.

4.3 PREBID CONFERENCE

4.3.1 The Design Professional of Record shall conduct a **Prebid Conference** approximately **fifteen (15), but not less than ten (10) days prior to the bid opening** date stated in the Invitation to Bid.

4.3.2 The Design Professional of Record and his consultants, as applicable, shall be represented. Prospective Bidders, Prospective Subcontractors, and Prospective Vendors are encouraged to attend and should be prepared to ask questions regarding substitutions and to request clarification of the Bidding Documents. The failure of a Bidder, Subcontractor, or Vendor to attend shall be interpreted to mean that the Bidding Documents are clear and acceptable to all non-participants at the Prebid Conference. Such clarity and acceptability shall be presumed with respect to all Bidders.

4.3.3 Questions and requests for clarification presented in written form will receive written response, and if warranted, issued as Addenda. No verbal response shall be binding.

4.4 RESIDENT OR VETERAN CONTRACTOR'S PREFERENCE

4.4.1 When Bids are received from nonresident contractors and resident or veteran contractors and the lowest responsible Bid is from a nonresident contractor, the contract shall be awarded to the resident or veteran contractor whose Bid is nearest to the bid price of the otherwise low nonresident contractor if the Bid price of the resident or veteran contractor is made lower than the Bid price of

the nonresident contractor when multiplied by the appropriate factor as established by the NM Taxation and Revenue Department.

4.4.2 No contractor shall be treated as a resident or veteran contractor in the awarding of public works contracts by the Owner unless the contractor has qualified with the NM Taxation & Revenue Department as a resident or veteran contractor pursuant to this section by making application to the NM Taxation & Revenue Department and receiving a certification number. Previous certification as a resident or veteran contractor by the NM General Services Department is valid until January 1, 2012. For convenience, and without warranty that the process is current, the procedure for application and certification is as follows:

A. The contractor seeking to qualify as a resident or veteran contractor shall complete the application form and submit it to the NM Taxation & Revenue Department) prior to the submission of a Bid on which the contractor desires to be given a preference (see Pages 00000-2 thru 00000-6);

B. The NM Taxation & Revenue Department shall examine the application and, if necessary, may seek additional information or proof so as to be assured that the Prospective Contractor is indeed entitled to certification as a resident or veteran contractor pursuant to Section 13-1-22, NMSA 1978. If the application is in proper form, the NM Taxation & Revenue Department shall issue the contractor a distinctive certification number, which is valid for three years from the date of issuance and which, when used on Bids and other purchasing documents for State agencies or local public bodies, entitles the contractor to treatment as a resident or veteran contractor under Subparagraph 4.4.1 of this section; and

C. The certification number issued pursuant to Subparagraph B of this section may be revoked by the NM Taxation & Revenue Department by making a determination that the contractor no longer meets the requirements of a resident or veteran contractor as defined in Section 13-1-22, NMSA 1978.

4.5 SUBCONTRACTORS

4.5.1 The bidder shall list the Subcontractors he proposes to use for all trades or items on the Subcontractor Listing Form attached to the Bidding Documents. This requirement does not apply to second tier subcontractors, material suppliers, or subcontractors whose contract is for an amount no greater than the listing threshold described by Subsection A of 13-4-34 below. Requirements for Subcontractors pursuant to Chapter 18, Laws of 1988, 2nd Session; are as follows:

AN ACT

RELATING TO CONSTRUCTION INDUSTRIES; ENACTING THE SUBCONTRACTOR FAIR PRACTICES ACT.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF NEW MEXICO:

13-4-31 SHORT TITLE

Section 1 through 12 of this act may be cited as the "Subcontractors Fair Practices Act".

13-4-32 LEGISLATIVE FINDINGS

The legislature finds that the practices of bid shopping and bid peddling in connection with the construction, alteration and repair of public works projects often result in poor quality of material and workmanship to the detriment of the public, deprive the public of the full benefits of fair competition among contractors and subcontractors and lead to insolvencies and loss of wages to employees.

13-4-33 DEFINITIONS

As used in the Subcontractors Fair Practices Act:

- A. "contractor" means the prime contractor on a public works construction project who contracts directly with the using agency;
 - B. "subcontractor" means a contractor who contracts directly with the contractor;
 - C. "listing threshold" means the dollar amount, stipulated in the bidding documents, above which subcontractors must be listed;
 - D. "notice" means information, advice or a written warning intended to apprise a contractor, subcontractor or using agency of some proceeding in which the contractor's, subcontractor's or using agency's interests are involved or to inform him of some fact that is his right to know. Notice may be sent to a contractor, subcontractor or using agency by certified or registered mail and shall be deemed to be completed upon date of mailing; and
 - E. "using agency" means any state agency or local public body requiring services or construction.
- (F.) (added for clarity from 13-4-13.1)** "listed subcontractor" means a subcontractor who is currently registered with the labor and industrial commission.

13-4-34 LISTING OF SUBCONTRACTORS; REQUIREMENTS

- A. Any using agency taking bids for any public works construction project shall provide in the bidding documents prepared for that project a listing threshold which shall be five thousand dollars (\$5,000) or one-half of one percent of the architect's or engineer's estimate of the total project cost, not including alternates, whichever is greater. If the bidding documents do not include a listing threshold, then the using agency shall supply the listing threshold. If the listing threshold has not been included, the bid opening shall be postponed until the using agency has complied with this section. Any contractor or subcontractor interested in bidding may apply to the district court in the county in which the project will be located for an injunction preventing the bid opening until the using agency has complied with this section. Any person submitting a bid shall in his bid set forth:
 - (1) the name and the city or county of the place of business of each subcontractor under subcontract to the contractor who will perform work or labor or render service to the contractor in or about the construction of the public works construction project in an amount in excess of the listing threshold; and
 - (2) the category of the work that will be done by each subcontractor. The contractor shall list only one subcontractor for each category as defined by the contractor in his bid.
- B. A bid submitted by a contractor who fails to comply with the provisions of Subsection A of this section is a non-responsive bid which shall not be accepted by a using agency.

13-4-35 EXEMPTION

With the exclusion of that portion of work covering street lighting and traffic signals, the Subcontractors Fair Practices Act shall not apply to contracts for the construction, improvement or repair of streets or highways, including bridges, underground utilities within easements including but not limited to water lines, sewer lines and storm sewer lines.

13-4-35.1 APPLICATION OF ACT

The Subcontractors Fair Practices Act shall not apply to any transaction occurring after the contractor and the listed subcontractor have executed a subcontract unless subsequent action on the subcontract relates to subcontractor listing requirements.

13-4-36 SUBSTITUTION OF SUBCONTRACTOR

- A. No contractor whose bid is accepted shall substitute any person as subcontractor in place of the subcontractor listed in the original bid, except that the using agency shall consent to the substitution of another person as a subcontractor:
 - (1) when the subcontractor listed in the bid, after having had a reasonable opportunity to do so, fails or refuses to execute a written contract, when such written contract, based upon the general

terms, conditions, plans and specifications for the project involved and the terms of such subcontractor's written bid, is presented to him by the contractor;

(2) when the subcontractor listed in the original bid becomes bankrupt or insolvent prior to execution of a subcontract;

(3) when the using agency refuses to approve the subcontractor listed in the original bid, provided such approval has been reserved in the bidding documents;

(4) when the subcontractor listed in the original bid fails or refuses to perform his subcontract;

(5) when the contractor demonstrates to the using agency or its duly authorized officer that the name of the subcontractor was listed as the result of an inadvertent clerical error;

(6) when a bid alternate accepted by the using agency causes the listed subcontractor's bid not to be low;

(7) when the contractor can substantiate to the using agency that a listed subcontractor's bid is incomplete;

(8) when the listed subcontractor fails or refuses to meet the bond requirements of the contractor; and,

(9) when it is determined that the listed subcontractor does not have a proper license to perform the work and the contractor has submitted the name of the subcontractor along with proof that the subcontractor bid work for which he was not licensed by the Construction Industries Division of the Regulation and Licensing Department.

(10) when it determined by the using agency, the prime contractor or the director of the labor and industrial division of the labor department that a listed subcontractor is not a registered subcontractor on the date bids are unconditionally accepted for consideration.

B. Prior to approval of the contractor's request for substitution of a subcontractor, the using agency shall give notice in writing to the listed subcontractor of the contractor's request to substitute and of the reasons for the request. The notice shall be served by certified or registered mail to the last known address of the subcontractor. The listed subcontractor who has been so notified has five (5) working days within which to submit written objections to the substitution to the using agency. Failure to file written objections shall constitute the listed subcontractor's consent to the substitution. If written objections are filed, the using agency shall give at least five (5) working days' notice in writing to the listed subcontractor of a hearing by the using agency on the contractor's request for substitution.

C. No contractor whose bid is accepted shall permit any subcontract to be voluntarily assigned or transferred or allow it to be performed by anyone other than the original subcontractor listed in the original bid without the consent of the using agency.

D. No contractor whose bid is accepted, other than in the performance of change orders causing changes or deviations from the original contract, shall sublet or subcontract any portion of the work in excess of the listing threshold as to which his original bid did not designate a subcontractor unless:

(1) the contractor fails to receive a bid for a category of work. Under such circumstances, the contractor may subcontract. The contractor shall designate on the listing form that no bid was received; or

(2) the contractor fails to receive more than one bid for a category of work. Under such circumstances, the contractor may subcontract. The contractor shall state on the listing form that only one subcontractor's bid was received, together with the name of the subcontractor. This designation shall not occur more than one time on the subcontractor list.

13-4-37 BOND REQUIREMENTS (This requirement to be modified by Invitation to Bid – Section 00 1116- Page 3

A. It is the responsibility of each subcontractor submitting a bid to a contractor to be prepared to submit a faithful performance and payment bond if so requested by the contractor.

B. In the event any subcontractor submitting a bid to a contractor does not, upon the request of the contractor and at the expense of the contractor at the established charge or premium therefore,

furnish to the contractor a bond issued by a corporate surety authorized to do business in New Mexico in accordance with the New Mexico Insurance Code (59A-1-1 to 59A-1-18, NMSA 1978) and listed in the United States treasury department circular 570 wherein the contractor is named the obligee, guaranteeing prompt and faithful performance of the subcontract and the payment of all claims for labor and materials furnished or used in and about the work to be done and performed under the subcontract, the contractor may reject the bid and make a substitution of another subcontractor subject to the provisions of Section 13-4-36, NMSA 1978. Such bond may be required at the expense of the subcontractor only if the contractor in his written or published request for subcontract bids:

- (1) specifies that the expense for the bond shall be borne by the subcontractor; and
- (2) clearly specifies the amount and requirements of the bond.

13-4-38. FAILURE TO SPECIFY SUBCONTRACTOR

If a contractor fails to list a subcontractor in excess of the listing threshold and he does not state that no bid was received or that only one bid was received, he represents that he is fully qualified to perform that portion of the work himself and that he shall perform that portion of the work himself. If after the award of the contract the contractor subcontracts any portion of the work, except as provided in the Subcontractors Fair Practices Act, the contractor shall be guilty of violation of the Subcontractors Fair Practices Act and subject to the penalties provided in Section 13-4-41 NMSA 1978.

13-4-39. INADVERTENT CLERICAL ERROR

- A.** The contractor, as a condition to assert a claim of inadvertent clerical error in the listing of a subcontractor, shall within four working days after the time of the prime bid opening by the using agency, give written notice to the using agency and to both the subcontractor he claims to have listed in error and the subcontractor who had bid to the contractor prior to bid opening.
- B.** Any listed subcontractor who has been notified by the contractor in accordance with the provisions of this section as to an inadvertent clerical error shall be allowed twelve working days from the time of the prime bid opening within which to submit to the using agency and to the contractor written objection to the contractor's claim of inadvertent clerical error. Failure of the listed subcontractor to file written notice within the twelve working days shall be primary evidence of his agreement that an inadvertent clerical error was made.
- C.** The using agency shall, in the absence of an objection to the contrary by the listed subcontractor in the original bid, consent to the substitution of the intended subcontractor if:
 - (1) the contractor, the listed subcontractor listed in error and the intended subcontractor each submit an affidavit to the using agency, along with such additional evidence as the parties may wish to submit, that an inadvertent clerical error was in fact made, provided that the affidavits from each of the three parties are filed within twelve working days from the time of the prime bid opening; or
 - (2) affidavits are filed by both the contractor and the intended subcontractor within the specified time but the subcontractor whom the contractor claims to have listed in error does not submit, within twelve working days from the time of prime bid opening, to the using agency and to the contractor written objection to the contractor's claim of inadvertent clerical error as provided in this section.
- D.** If affidavits are filed by both the contractor and the intended subcontractor but the listed subcontractor has, within twelve working days from the time of the prime bid opening, submitted to the using agency and to the contractor written objection to the contractor's claim of inadvertent clerical error, the using agency shall investigate the claims of the parties and hold a hearing to determine the validity of the claims, within thirty days after the receipt of the contractor's written objection. Any determination made shall be based on facts contained in the affidavits submitted by all three parties and supported by testimony under oath and subject to cross-examination. The using agency may, on its motion or that of any other party, admit testimony of other contractors, any bid

registries or depositories or any other party in possession of facts that may have a bearing on the decision of the using agency.

13-4-40. EMERGENCY SUBCONTRACTING

Subcontracting any portion of the work in excess of the listing threshold as to which no subcontractor was designated in the original bid shall be permitted only in the case of public emergency or necessity and then only upon a written finding by the using agency setting forth the facts constituting the emergency or necessity.

13-4-41. PENALTIES

A. When a contractor violates any provision of the Subcontractors Fair Practices Act except Section 13-4-34 NMSA 1978, the using agency shall:

(1) in the case of a contractor who substitutes another subcontractor in violation of Section 13-4-36 NMSA 1978, for the subcontractor originally included in the bid, assess the contractor a penalty in an amount equal to the greater of ten percent of the amount bid by the listed subcontractor or the difference between the amount bid by the listed subcontractor and the amount bid by the substituted subcontractor;

(2) in the case of a contractor substituting a listed subcontractor for another subcontractor, and the substituted subcontractor knowingly participated in a violation of Section 13-4-36 NMSA 1978, assess the substituted subcontractor a penalty in an amount equal to the greater of ten percent of the amount bid by the listed subcontractor and the difference between the amount bid by the listed subcontractor and the substituted subcontractor; or

(3) in the case of a contractor who fails to list a subcontractor in excess of the listing threshold as defined in Section 13-4-38 NMSA 1978, assess the contractor a penalty of eight percent of the amount of the subcontract issued for the first violation and thirty percent of the amount of the subcontract issued for any violation thereafter, on any one project.

B. Penalties assessed pursuant to the provisions of this section shall be deposited into the fund from which the contract was awarded.

C. In a proceeding under this section, the contractor shall be entitled to a hearing after notice.

D. A violation of the provisions of the Subcontractors Fair Practices Act constitutes grounds for disciplinary action against a contractor or a subcontractor, pursuant to regulations of the construction industries division of the regulation and licensing department.

E. A contractor or a subcontractor who attempts to circumvent the provisions of the Subcontractors Fair Practices Act shall be subject to the penalties established pursuant to this section.

F. Any listed subcontractor removed in violation of the Subcontractors Fair Practices Act may bring an action in the district court for damages, injunctive or other relief.

13-4-42. COVERAGE OF HOME RULE MUNICIPALITIES

Any home rule municipality or H class county chartered under the provisions of Article 10, Section 6 of the constitution of New Mexico is expressly denied authority to legislate regulation of the subject matter covered in the Subcontractors Fair Practices Act that conflicts with the provisions of that act.

13-4-43. DISPUTE RESOLUTION

Once the using agency has determined the existence of a valid claim under the provisions of the Subcontractors Fair Practices Act, the using agency or agent of the using agency may:

A. hold a public hearing for the purpose of providing an informal resolution of the dispute by preparing a "form of dispute" which shall be available to all parties. The form shall state concisely, in numbered paragraphs, the matter at issue or dispute which the complainant expects to be determined. The agent or the using agency shall evaluate the issues presented by both sides of the dispute and render a decision within ten days after the hearing, and provide the parties with a written copy of the decision by certified mail, return receipt requested; or

B. refer the matter in dispute to be resolved through arbitration.

4.5.2 The Bidder shall not list himself as the supplier or as the Subcontractor for any trade unless he has previously performed work of this type or can prove to the Design Professional and the Owner's satisfaction that he actually has, or will obtain, fully adequate ability to perform the work with his own forces.

4.5.3 Omission or non-compliance with the intent of the Subcontractor Listing (Section 00430) will be grounds for considering a bid as non-responsive.

4.5.4 Prior to the award of the Contract, the Design Professional will notify the Bidder in writing if either the Owner or the Design Professional, after due investigation and written findings of fact, has reasonable and substantial objection to any person or organization on such list. If the Owner or Design Professional has reasonable and substantial objection to any person or organization on such list and refuses in writing to accept such person or organization, the Bidder may, at his option:

- A.** withdraw his Bid, or,
- B.** submit an acceptable substitute Subcontractor.

In the event of withdrawal under this paragraph, bid security will not be forfeited.

4.5.5 The Successful Bidder shall, within ten (10) days of Notice of Award of the Contract for the Work, submit to the Design Professional all of the requirements of Subparagraph 6.1.

4.5.6 The Successful Bidder will be required to establish to the satisfaction of the Design Professional and the Owner the reliability and responsibility of the persons or entities proposed to furnish and perform the work described in the Bidding Documents.

4.5.7 Persons and organizations proposed by the Bidder and to whom the Owner and the Design Professional have made no reasonable objection under the provisions of Paragraph 4.5.6 must be used on the work for which they were proposed and shall not be changed except with the written consent of the Owner and the Design Professional. In an effort to gain consent, provide, if possible, a written request from the person or organization wishing to be replaced by the Bidder explaining the need for the replacement.

4.5.8 No Successful Bidder shall be required to employ any Subcontractor, other person, or organization against whom he has reasonable objection.

4.6 SUBMISSION OF BIDS

4.6.1 Bid, bid security, Subcontractors Listing Form, and other required documents listed in the Bidding Documents shall be submitted in an opaque sealed envelope marked in accordance with Subparagraph 4.6.2 below.

4.6.2 The Bid envelope shall be addressed as required by Section 00_2114 – Instructions to Bidders – Part B.

4.6.3 Bids received after the date and time for receipt of bids will be returned unopened.

4.6.4 The Bidder shall assume full responsibility for timely delivery of bids to the Owner, including those Bids submitted by mail or otherwise. Bids hand delivered to the Bid Opening Address shall be received beginning one hour prior to the bid. Bids will be clocked in at the time received, which must be prior to the time specified. Bids will then be held for public opening.

4.6.5 Oral, telephonic, or telegraphic bids are invalid and will not receive consideration.

4.7 CORRECTION OR WITHDRAWAL OF BIDS

4.7.1 A bid containing a mistake discovered before Bid Opening may be withdrawn by a bidder prior to the time set for Bid Opening by delivering verbal, written or telegraphic notice to the location designated in the Invitation for Bid as the place where bids are to be received.

4.7.2 Bid security, if required, shall be in an amount sufficient for the bid in conformance with Section 4.2.

4.7.3 Withdrawn Bids may be resubmitted up to the time and date designated for the receipt of Bids, provided they are then fully in conformance with the Bidding Documents.

4.7.4 After Bid Opening time, no modifications in bid prices or other provisions of bids shall be permitted.

4.7.5 After Bid Opening, a low Bidder alleging a material mistake of fact which makes his Bid non-responsive may be permitted to withdraw his Bid if the:

A. mistake is clearly evident on the face of the Bid Document; or

B. Bidder submits evidence which clearly and convincingly demonstrates that a mistake was made.

Any decision by the Owner to permit or deny the withdrawal of a Bid on the basis of a mistake contained therein shall be supported by a written determination setting forth the grounds for the decision. If withdrawal is permitted, bid security will not be forfeited.

4.8 NOTICE OF CONTRACT REQUIREMENTS BINDING ON BIDDER

4.8.1 In submitting this bid, the Bidder represents that he has familiarized himself with the nature and extent of the following requirements and of the Conditions of the Construction Contract (General, Supplementary, Project and Other Conditions):

4.9 REJECTION OR CANCELLATION OF BIDS

An Invitation for Bid may be canceled, or any or all Bids may be rejected in whole or in part, when it is in the best interest of the Owner. A determination containing the reasons therefore shall be made part of the Project file. Bid security for rejected Bids shall be returned to the Bidder.

4.10 CONSIDERATION OF BIDS

4.10.1 RECEIPT, OPENING, AND RECORDING

Bids received on time will be opened publicly and will be read aloud, and an abstract of the amounts of the Base Bids and Alternates or bid items, if any, will be made available to the Bidders. Each Bid shall be open to public inspection (13-1-107, NMSA 1978).

4.10.2 BID EVALUATION AND AWARD

4.10.2.1 The Owner shall have the right to waive technical irregularities in the form of the Bid of the low Bidder which do not alter the price, quality, or quantity of the services, construction, or items of tangible personal property bid (13-1-132, NMSA 1978).

4.10.2.2 It is the intent of the Owner to award a contract to the lowest responsible bidder, provided the Bid has been submitted in accordance with the requirements of the Bidding Documents. The unreasonable failure of a Bidder to promptly supply information in connection with an inquiry with respect to responsibility is grounds for a determination that the Bidder is not a responsible Bidder (13-1-133, NMSA 1978). See Section 6 as to Post-Bid Information that may be required of a Contractor as to qualifications.

4.10.2.3 If the Base Bid is within the amount of funds available to finance the construction, contract award will be made to the responsible Bidder submitting the low Base Bid; except that, if sufficient funds are available to fund alternates, the Owner may award the contract to the responsible Bidder submitting the low combined Bid within the amount of funds available (Base Bid plus or minus alternates. If

the award is based on alternates, the Owner shall accept them in the order in which they are listed on the Bid Form.

4.10.2.4 Discrepancies in the Bid Form between words and figures will be resolved in favor of words. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

4.10.2.5 Conditional Bids or Bids with additional terms will not be accepted.

4.11 NOTICE OF AWARD

A written Notice of Award shall be issued by the Owner after review and approval of the bid and related documents by the Owner with reasonable promptness (13-1-100 and 13-1-108, NMSA 1978).

4.12 CANCELLATION OF AWARD

When in the best interest of the public, the Owner may cancel the award of any contract at any time before the execution of said contract by all parties without any liability against the Owner.

5.0 PROTESTS

5.1 Any bidder, offerer, or contractor who is aggrieved in connection with this procurement (Bid) may protest to the Owner's Central Purchasing Agent and the Owner in accordance with the requirements of General Services Department Rule 93-601. The protest should be made in writing within twenty-four (24) hours after the facts or occurrences giving rise thereto, but in no case later than fifteen (15) calendar days after the facts or occurrences giving rise thereto (13-1-172, NMSA 1978).

5.2 In the event of a timely protest under Subparagraph 4.10.1 (13-1-172, NMSA 1978 of the Procurement Code), the Owner's Central Purchasing Agent and the Owner shall not proceed further with the procurement unless the Owner's Purchasing Agent or the Owner makes a determination that the award of contract is necessary to protect substantial interests of the Owner (13-1-173, NMSA 1978).

5.3 The Owner's Central Purchasing Agent or his designee shall have the authority to take any action reasonably necessary to resolve a protest of an aggrieved bidder, offerer, or contractor concerning a procurement.

5.4 The Owner's Central Purchasing Agent or his designee shall promptly issue a determination relating to the protest. The determination shall:

- A.** state the reasons for the action taken; and
- B.** inform the protestant of the right to judicial review of the determination pursuant to Section 13-1-183, NMSA 1978 of the Procurement Code (13-1-175, NMSA 1978).

5.5 A copy of the determination issued under Section 13-1-175, NMSA 1978 of the Procurement Code shall immediately be mailed to the protestant and other bidders or offerers involved in the procurement (13-1-176, NMSA 1978).

6.0 POST-BID INFORMATION

6.1 SUBMITTALS TO DESIGN PROFESSIONAL

Within ten (10) days of Notice of Award and prior to construction, the following shall be submitted to the Design Professional:

- A.** the Contractor required bonds and Certificates of Insurance;

- B.** for the Owner's consideration for approval, a resume and Statement of Qualification of proposed Superintendent(s) and assistants until acceptable individuals are selected in accordance with Subparagraph 3.9.2 of the General Conditions to the Construction Contract;
- C.** signed Subcontractors List including contract amount of each, evidence of required bonds, costs of each bond, and beneficiary of each bond; evidence of DOL registration, evidence of CID licensure;
- D.** Assignment of Antitrust Claims (required for the Contractor, all Subcontractors, and all Suppliers);
- E.** Certificate of Insurance;
- F.** State W-9;
- G.** evidence of other bonds or documents as specified in the Bidding Documents; and
- H.** Schedule of Values and required supporting data in accordance with Paragraph 9.2 of the General Conditions to the Construction Contract.

6.2 RETURN OF BID SECURITY

All Bid Security in the form of checks, except those of the two lowest Bidders, will be returned immediately following the opening and checking of the Bids. The retained bid security of the unsuccessful of the two lowest bidders, if in the form of a check, will be returned within fifteen (15) days following the award of contract. The retained bid security of the Successful Bidder, if in the form of a check, will be returned after a satisfactory contract bond has been furnished and the Contract has been executed. Bid Securities in the form of Bid Bonds will be returned only upon the request of the unsuccessful Bidder, but will be released by the Purchasing Agent for the District after the Notice of Award is sent by the Owner.

6.3 EXECUTION AND APPROVAL OF CONTRACT

The Contract shall be signed by the Successful Bidder and returned, together with both the Contract Bonds and Certificate of Insurance, within fifteen (15) days after the date of the Notice of Award. If the Contract is not executed by the Owner within forty-five (45) days following receipt from the Bidder of the signed Contract with Bonds and Certificate, the Bidder shall have the right to withdraw his proposal without penalty unless the Bidder has previously agreed to extend the date for acceptance by the Owner. No Contract shall be effective until it has been fully executed by all of the parties thereto.

6.4 NOTICE TO PROCEED

The Owner will issue a written Notice to Proceed to the Contractor stipulating the date from which Contract Time will be charged and the date Contract Time is to expire, subject to valid modifications of the Contract authorized by Change Order.

6.5 FAILURE TO EXECUTE CONTRACT

Failure to return the signed Contract with acceptable Contract Bonds and Certificate of Insurance within fifteen (15) days after the date of the Notice of Award shall be just cause for the cancellation of the award and the forfeiture of the Bid Security, which shall become the property of the Owner, not as a penalty, but in liquidation of damages sustained. Award may then be made to the next lowest responsible Bidder, or the Work may be re-advertised and constructed under contract or otherwise, as the Owner may decide.

6.6 CONTRACTOR'S QUALIFICATIONS STATEMENT

Bidders to whom award of a contract is under consideration shall submit, upon request, information and data to prove that their financial resources, production or service facilities, and service reputation and experience are adequate to make satisfactory delivery of the services, construction, or items of personal property described in the Bidding Documents (13-1-82, NMSA 1978). The Contractor shall always submit the requirements of Subparagraph 3.9.2 of the General Conditions to the Construction Contract and also in accordance with Paragraph 6.1-B above.

7.0 OTHER INSTRUCTIONS TO BIDDERS

7.1 The bid will be awarded in accordance with Subparagraph 4.10.2.3. The Owner may accept from the apparent low bidder prior to the Award, a reduction to the bid cost or time and, may discuss with the apparent low bidder for potential deductive modifications to the Work prior to the Award however, the Award shall be made on the un-modified Construction Documents with alternates accepted in accordance with this Paragraph 7.0.

7.2 If the lowest responsible bid has otherwise qualified, and if there is no change in the original project scope, terms or conditions, the lowest bidder may negotiate with the purchaser for a lower total bid in order to avoid rejection of all bids for the reason that the lowest bid was up to ten percent higher than budgeted project funds. Such negotiation shall not be allowed if the lowest bid was more than ten percent over budgeted project funds.

INSTRUCTIONS TO BIDDERS – PART B

Section 00 2114

1.0 BID ENVELOPE

The Bid envelope shall be addressed at the front center of the envelope to:

ROSWELL INDEPENDENT SCHOOL DISTRICT
CHRIS THWEATT
508 W. COLLEGE BLVD
ROSWELL, NM 88201

Also on the front of the envelope the Bidder shall mark: the name and address of the Bidder shall in the upper left corner; the name of project, Invitation to Bid Number, date of opening and, time of opening in the lower left corner; and, "**SEALED BIDS ENCLOSED**" in the lower right corner or otherwise on the face thereof.

-END OF SECTION-

SECTION 00 3100- AVAILABLE PROJECT INFORMATION

EXISTING REPORTS AND SURVEYS

1.1 SUBSURFACE INVESTIGATION REPORT

- A. A copy of a geotechnical report with respect to the building site is included with this document:
 - 1. Title: Geotechnical Report, Nancy Lopez Elementary School, Roswell, New Mexico.
 - 2. Dated: February 17, 2023
 - 3. Prepared by: Terracon Project No. 68225053
- B. The recommendations described shall be construed as a requirement of this Contract, unless specifically referenced in the Contract Documents.
- C. This report, by its nature, cannot reveal all conditions that exist on the site.

END OF SECTION 00 3100



Geotechnical Engineering Report

**Nancy Lopez Elementary School
Roswell, New Mexico**

February 17, 2023

Terracon Project No. 68225053

Prepared for:

Roswell Independent School District
Roswell, New Mexico

Prepared by:

Terracon Consultants, Inc.
Las Cruces, New Mexico



February 17, 2023

Roswell Independent School District
300 North Kentucky, Room 200
Roswell, New Mexico 88201



Attn: Mr. Jeremy Sanchez, CCCA
Construction Coordinator

**Re: Geotechnical Engineering Report
Nancy Lopez Elementary School
Hinkle Street and Hendricks Street
Roswell, New Mexico
Terracon Project No. 68225053**

Dear Mr. Sanchez:

Terracon Consultants, Inc. (Terracon) is pleased to submit our Geotechnical Engineering Report for the above referenced project in Roswell, New Mexico. We trust that this report is responsive to your project needs, and we appreciate the opportunity to be of service to you on this project. We look forward to providing additional geotechnical or construction materials testing services in the near future. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,

Terracon Consultants, Inc.
New Mexico PE Firm License No. 362650

A handwritten signature in blue ink, appearing to read "D. Castrillo".

Daniel J. Castrillo
Geotechnical Staff

Ivan Avelar, P.E.
Geotechnical Services Manager

Ruben Solis-Hernandez, P.E.
Principal / Office Manager

Enclosures
Copies Submitted: Addressee (1) Electronic

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Note: This report was originally delivered in a web-based format. **Orange Bold** text in the report indicates a referenced section heading. The PDF version also includes hyperlinks which direct the reader to that section and clicking on the **GeoReport** logo will bring you back to this page. For more interactive features, please view your project online at client.terracon.com.

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES
SITE LOCATION AND EXPLORATION PLANS
EXPLORATION RESULTS
FIGURES
SUPPORTING INFORMATION

Note: Refer to each individual Attachment for a listing of contents.

Geotechnical Engineering Report

Nancy Lopez Elementary School

Hinkle Street and Hendricks Street

Roswell, New Mexico

Terracon Project No. 68225053

February 17, 2023

INTRODUCTION

Terracon Consultants, Inc. (Terracon) is pleased to present the results of our subsurface exploration and geotechnical engineering services performed for the proposed Nancy Lopez Elementary School to be located at the northwest intersection of Hinkle Street and Hendricks Street in Roswell, New Mexico. This project was authorized by Mr. Chris Thweatt, representing Roswell Independent School District through signature of our Agreement for Services, on December 2, 2022. The project scope of work was performed in general accordance with Terracon Cost Estimate Document No. P68225053.Revision1, dated August 11, 2022. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil and groundwater conditions.
- Seismic characterization for the site.
- Site and subgrade preparation.
- Geotechnical parameters for foundation design.
- Guidelines for foundation construction.
- Guidelines for pavement thickness design and construction.
- Construction guidelines and considerations for on-site storm water detention ponds
- Other earthwork-related aspects of construction

The geotechnical engineering Scope of Services for this project included the advancement of 17 test borings (B-1 through B-15, P-1 and P-2) to depths varying from approximately 6½ to 30 feet below existing site grades and two soil percolation test holes (Perc-1 and Perc-2) to depths of approximately 5 feet below existing site grades.

Maps showing the site and boring locations are shown in the **Site Location** and **Exploration Plan** sections, respectively. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included on the boring logs and as separate graphs in the **Exploration Results** section.

PROJECT DESCRIPTION

Our initial understanding of the project was provided in our proposal and was discussed during project planning. A period of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
Project Description	The project is planned to consist of a single-story building with a footprint area of about 41,100 square feet with adjacent pavement and driveway areas, along with adjacent landscape/detention pond areas.
Building Construction	The proposed one-story building is planned to consist of steel frame construction and an exterior insulation finishing system (EIFS).
Maximum Loads (provided by Client)	<ul style="list-style-type: none"> ■ Columns: 50 kips ■ Walls: 4.0 kips per linear foot (klf) ■ Slabs: 120 pounds per square foot (psf) (assumed)
Maximum allowable settlement	We assumed that the maximum allowable total and differential settlement are in the range of 1 inch, and ½-inch, respectively.
Finished Floor Elevation (FFE)¹	Not provided at the time of this report. We assumed that the FFE is planned to be within 24 inches above the existing grades.
Grading, Cut/Fill Earthwork and Slopes¹	We assumed the finished grade elevation (FGE) will differ from existing grades by no more than 18 inches.
Below-Grade Structures	We understand that no basements are being planned to be constructed for this project.
Free-Standing Retaining Walls	Retaining walls are not anticipated to be constructed as part of site development to achieve final grades.
Pavements	We understand parking and driveway areas, as well as trash pickup pads are planned to be constructed at this site. We assumed both rigid (concrete) and flexible (asphalt) pavement sections will be considered for this project. We also understand an aggregate surface fire lane will also be considered near the northern portion of the proposed building.
Drainage	Storm water runoff is planned to be disposed of into on-site depressed landscape areas.

1. If the site grading is planned to be different from our assumptions as described in this report, Terracon should be contacted and provided with the information for our evaluation and revision of the recommendations presented in this report, if applicable

SITE CONDITIONS

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Location and Parcel Information	The project site is located near the northwest corner of the intersection of Hinkle Street and Hendricks Street in Roswell, New Mexico, (Latitude: N33.38954°, Longitude: W104.50005°). See Site Location and Exploration Plans for additional project location information.

Item	Description
Existing Features and Improvements	The project site consists of an approximate 9.0-acre parcel of undeveloped land. A fenced-in staging area that contains construction equipment was observed to be present within the southwestern portion of the project site. We understand the staging area is planned to be removed from the site at the time of construction.
Current Ground Cover	Exposed native soil and lightly vegetated.
Existing Topography	The site was relatively level at the time of our field exploration.
Geology	Specific geologic conditions mapped at the location of the project site includes Piedmont alluvial deposits, of Holocene to lower Pleistocene origin, described as deposits of higher gradient tributaries bordering major stream valleys, alluvial veneers of the piedmont slope, and other alluvial fans. A geologic fault investigation and study of the site geology are beyond the scope of this report.

GEOTECHNICAL CHARACTERIZATION

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting and our understanding of the project. This characterization, termed *GeoModel*, forms the basis of our geotechnical calculations and evaluation of site preparation and foundation options.

Subsurface conditions on the project site can be generalized as medium stiff to very stiff lean clays with varying amounts of sand and calcareous material (classifying as CL in accordance with the Unified Soil Classification System, USCS). A 9-foot layer of fat clay with sand (classifying as CH in accordance with USCS) was observed in Boring B-3 at a depth of 10 feet below the ground surface.

Details and soil conditions for each of the borings can be found in the individual logs of borings in the **Exploration Results** section. Stratification boundaries on the boring logs represent the approximate location of changes in soil types. In-situ, the transition between materials may be gradual. A visual side-by-side compilation showing the general subsurface profile observed in our Borings B-1 through B-15, P-1 and P-2 is presented as *GeoModel*, which can be found in the **Figures** section of this report.

Model Layer	Layer Name	General Description
1	CL	Lean Clay with Sand and Sandy Lean Clay with varying amounts of gravel (medium stiff to hard)
2	GC	Clayey Gravel with Sand (medium dense)
3	SC-SM	Silty, Clayey Sand (loose to medium dense)
4	CH	Fat Clay with Sand (stiff to very stiff)

Groundwater

Borings B-1 through B-15, and percolation test holes P-1 and P-2 were advanced using dry auger drilling techniques to their termination depths (ranging from approximately 5 to 30 feet below existing grade) in an effort to evaluate groundwater conditions while drilling and immediately after completion of our drilling operations. The water levels observed in the boreholes can be found in the individual logs of soil borings in **Exploration Results**, and they are summarized in the *GeoModel* figure presented in the **Figures** section of this report.

Groundwater was observed at borings B-1 through B-7 during or upon completion of our drilling operations at depths ranging from about 21 to 26 ½ feet below ground surface (bgs). The presence of groundwater at the time of the field exploration may not be indicative of other times, circumstances (such as perched water conditions), or at other locations. We anticipate the groundwater table may not be observed during shallow foundation excavations operations.

Groundwater was not observed at borings B-8 through B-15 or percolation test holes P-1 and P-2 while drilling. However, this does not necessarily mean these borings terminated above groundwater, or that the water levels summarized above are stable groundwater levels. Due to the low permeability of the soils observed in the borings, a relatively long period of time may be necessary for a groundwater level to develop and stabilize in a borehole in these materials. Long term observations in piezometers or observation wells sealed from the influence of surface water are often required to define groundwater levels in materials of this type.

The groundwater observations were recorded while drilling and after completion for the presence and level of groundwater. The water levels observed in each soil boring during our drilling operations can be found in **Exploration Results**, and they are summarized below:

Boring number	Depth to groundwater while drilling (feet)
B-1	21
B-2	22
B-3	26½
B-4	25
B-5	26
B-6	21
B-7	26
B-8	Not observed
B-9	Not observed
B-10	Not observed
B-11	Not observed
B-12	Not observed
B-13	Not observed
B-14	Not observed
B-15	Not observed
P-1	Not observed

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Boring number	Depth to groundwater while drilling (feet)
<i>(Continued from page 4)</i> P-2	Not observed

Groundwater observations provide an indication of the groundwater conditions (or absence thereof) present at the time the borings were conducted. Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project and should be evaluated prior to construction.

GEOTECHNICAL OVERVIEW

Based on the information obtained from our subsurface exploration, the site can be developed for the proposed project, provided our recommendations presented in the **Site Preparation** and **Ground Improvement** sections of this report are implemented. A summary of our findings and recommendations is provided below.

- Groundwater was observed at Borings B-1 through B-7 at depths that varied from approximately 21 to 26½ feet below existing grade during or upon completion of our drilling operations. Ground water was not observed at borings B-8 through B-15, or percolation test holes P-1, and P-2 during or upon completion of our drilling operations. These observations represent conditions at the time of the field exploration and may not be indicative of other times, circumstances (such as perched conditions), or at other locations.
- The near surface soils predominantly consist of native, medium stiff to stiff lean clays with varying amounts of sand and calcareous material (classifying as CL in accordance with USCS) and are not suitable for re-use as engineered fill based on soil classification and plasticity within the proposed building pad.
- Expansive soils were observed at this site. This report provides recommendations to help mitigate the effects of soil volumetric shrinkage and expansion. However, even if these procedures are followed, some movement and distress in the building should be anticipated. The severity of distress will increase if any modifications of the site results in excessive wetting or drying of the expansive soils. Eliminating the risk of movement associated with expansive soils may not be feasible. Refer to the **Floor Slabs** section of this report for additional recommendations.

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- Based on the information developed from our field and laboratory programs, we estimate that the subgrade soils within the proposed building footprint exhibit a Potential Vertical Rise (PVR) of approximately 2¼ inches in their observed moisture condition and thicknesses.
- The most common method of subgrade preparation to reduce the potential expansion of the subgrade would be to provide a pad of properly placed and compacted select fill beneath the building area. In order to provide a uniform support to the slab and to reduce the estimated PVR of the subgrade to approximately one inch or less, we recommend that a minimum of 5 feet of properly placed and compacted structural fill material (clayey sand soils with PI values not exceeding 15) be constructed immediately beneath the building slab and canopy supports. The pad should extend a minimum of 5 feet beyond the edge of the proposed building slab and canopy supports. Refer to the **Floor Slabs** section of this report for additional recommendations.
- Based on the subsurface conditions observed during our field and laboratory programs, a shallow foundation system consisting of spread/strip footings may be utilized to support the structural loads of the proposed building and canopy structures, provided the recommendations outlined in the **Ground Improvement** section are implemented, and exposed native soils are properly prepared, moisture conditioned, and recompacted as recommended in the **Earthwork** section of this report.
- These surficial soils could become soft with typical earthwork and construction traffic, especially after precipitation events, which could result in shoving or pumping issues. Therefore, the effective drainage should be completed early in the construction sequence and maintained after construction. If possible, the grading should be performed during the warmer and drier time of the year. If grading is performed during the winter months, an increased risk for possible undercutting and replacement of unstable subgrade will persist. Additional site preparation recommendations, including subgrade improvement, fill placement, and excavations are provided in the **Earthwork** section of this report.
- The **Floor Slabs** section addresses slab-on-grade support of the proposed building.
- Effective drainage should be completed early in the construction sequence and maintained after construction. Additional site preparation recommendations, including subgrade improvement, fill placement, and excavations are provided in the **Earthwork** section of this report.
- Based on our experience with similar projects in similar site conditions, both flexible (asphaltic concrete) and rigid (Portland cement concrete) pavement systems may be

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considered for this site. The **Pavements** section addresses design of pavement systems.

- We also understand unpaved aggregate surface roads are being considered for this site. The **Aggregate Surface Roads** section addresses guidelines for unpaved aggregate road systems.

The above summary should be used in conjunction with the entire report for design purposes. Details were not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein. The section titled **General Comments** should be read for an understanding of the report limitations.

EARTHWORK

The following sections present recommendations for site preparation, excavation, subgrade preparation and placement of engineered fill on the project. Earthwork on the project should be evaluated by Terracon, which should include observation and testing of those tasks and materials, and of other geotechnical conditions exposed during the construction of the project. The recommendations presented for design and construction of earth-supported elements, such as the proposed building and canopy structures, are contingent upon following the recommendations outlined herein.

Geotechnical Considerations

Expansive soils were observed at this site. This report provides recommendations to help reduce the effects of soil shrinkage and expansion. However, even if these procedures are followed, some movement and distress in the building should be anticipated. The severity of distress will increase if any modification of the site results in excessive wetting or drying of the expansive soils. Eliminating the risk of movement associated with expansive soils may not be feasible.

The near surface soils could become soft with typical earthwork and construction traffic, especially after precipitation events, which could result in shoving or pumping issues. Therefore, the effective drainage should be completed early in the construction sequence and maintained after construction. If possible, the grading should be performed during the warmer and drier time of the year. If grading is performed during the winter months, an increased risk for possible undercutting and replacement of unstable subgrade will persist.

Additional site preparation recommendations, including subgrade improvement, fill placement, and excavations are provided in the **Earthwork** section of this report.

Site Preparation

Construction areas should be first stripped and grubbed to a sufficient depth to remove visual remains of vegetation, organic material and other debris/unsuitable surface material at the start of the earthwork operations.

The near-surface soils at this site generally exhibited expansion potential. The most common method of subgrade preparation to help reduce potential expansion of the subgrade would be to provide a pad of properly placed and compacted select fill beneath the proposed building and canopy supports. To provide uniform support to the floor slab and to reduce the estimated Potential Vertical Rise (PVR) to approximately one inch or less, we recommend that **a minimum 5 feet of non-expansive, properly placed and compacted structural fill replacement material be constructed immediately beneath the floor slab** as presented in the **Ground Improvement** section of this report.

The building pad should extend a minimum of 5 feet beyond the edge of the proposed building and canopy supports footprint area. The final exterior grade adjacent to the building and canopy supports should be sloped to promote effective drainage away from the building and canopy supports. Prior to the placement of the fill pad, the site should be properly cut, over-excavated and graded to create a relatively level surface to receive fill and to provide for a relatively uniform thickness of fill beneath the proposed structures (where applicable). Proper site drainage should be maintained during construction so that ponding of surface runoff does not occur and cause construction delays and/or inhibit site access. Therefore, effective drainage should be completed early in the construction sequence and maintained after construction. The final exterior grade adjacent to the building and canopy supports should be sloped to promote effective drainage away from the structures.

Once final subgrade elevations have been achieved **(including over-excavation to accommodate the 5-foot pad as recommended in the Ground Improvement section of this report)**, the exposed subgrade should be carefully proofrolled with a 20-ton pneumatic roller or equivalent equipment, such as a fully loaded dump truck, to detect weak zones in the subgrade. Weak areas detected during proofrolling, as well as zones containing organic matter and debris, should be removed and replaced with soils exhibiting similar classification, moisture content, and density as the adjacent in-situ soils.

Areas that exhibit saturated conditions, shoving, pumping or rutting during proofrolling operations, sacrificial crushed stone (4-inch layers) followed by No. 57 rock) may be pushed into the subgrade. Multiple alternating layers of 4-inch rock (followed by No. 57 rock) may be needed to be placed until a stable working platform for the earthwork equipment is achieved. If subgrade shoving or pumping conditions persist after the addition and compaction of sacrificial stone, Terracon should be contacted to provide additional recommendations.

Subsequent to proofrolling, and just prior to placement of engineered fill, the exposed subgrade within the construction areas should be evaluated for moisture and density. If the moisture and/or

density do not meet the criteria described in the *Compaction Requirements* subsection below, the subgrade classification should be evaluated according to the *Fill Material Classification and Requirements* subsection below, scarified to a minimum depth of 8 inches, moisture conditioned, and compacted according to the *Compaction Requirements* subsection below.

Please note that over-excavation and fill material replacement will be needed for under the loaded area of the proposed shallow foundation system. Over-excavation recommendations and details are provided in the **Ground Improvement** section of this report. The **Floor Slabs** section addresses slab-on-grade support of the building. Additional subgrade preparation for pavement areas is presented in the **Pavements** section of this report.

Fill Material Classification and Requirements

On-site, imported, structural, engineered, processed and/or recompacted soil, fill and backfill used for this site should be free of visual remains of vegetation and organic debris, and free of particles larger than 4 inches in nominal diameter. The classification and physical property requirements of fill material are presented in the table below along with the acceptable locations for placement:

Fill Type ¹	USCS Classification	Suitable for use at these locations
On-Site Soils	CL ² (or combinations thereof)	<ul style="list-style-type: none"> ■ General site grading and fill, including scarified surfaces. ■ Small utility service line and drain trench backfill.
Imported	CL ³ , SC ³ (or combinations thereof)	<ul style="list-style-type: none"> ■ General site grading and fill, including scarified surfaces. ■ Building pad. ■ As structural fill under slab, footings and as footing over-excavation backfill. ■ Under slab and pavement. ■ Small utility service line and drain trench backfill.

1. Controlled, compacted fill should consist of approved materials that are visually free of organic matter, debris and particles larger than 4 inches. Frozen material should not be used, and fill should not be placed on a frozen subgrade. A sample of each proposed fill source should be submitted to the geotechnical engineer for evaluation.
2. **On-site soils classified as CL are considered suitable for use as fill material provided these soils consistently have a liquid limit (LL) not exceeding 35, and a plasticity index (PI) not exceeding 15 or properly mixed and processed to consistently meet these requirements (see additional information below this table about minimum blending requirements).**
3. Imported lean clay and clayey sands. The fill material should have a liquid limit (LL) not exceeding 35, and a plasticity index (PI) not exceeding 15.

If blended or mixed soils are intended for use to construct the building pad, Terracon should be contacted to provide additional recommendations. Blended or mixed soils do not occur naturally. These soils are a blend of sand and clay and will require mechanical mixing at the site with a pulvimixer. If these soils are not mixed thoroughly to break down the clay clods and blend-in the sand to produce a uniform soil matrix, the fill material may be detrimental to the slab performance.

If blended soils are used, we recommend that additional samples of the blended soils, as well as the clay clods, be obtained prior to and during earthwork operations to evaluate if the blended soils can be used in lieu of structural fill. The actual type and amount of mechanical mixing at the site will depend on the amount of clay and sand, and properties of the clay.

Prior to filling operations, samples of the proposed borrow and on-site materials should be obtained for laboratory moisture-density testing and suitability of placement guidelines as stated above. The tests will provide a basis for evaluation of fill compaction by in-place density testing. A qualified soil technician should perform sufficient in-place density tests during the filling operations to evaluate that proper levels of compaction, including dry unit weight and moisture content, are being attained.

Compaction Requirements

Exposed subgrade and fill should be properly moisture-conditioned and compacted according to the following requirements:

Material Type and Location ¹	Compaction Parameters ²		
	Min. Compaction Requirement	Range of Moisture Contents for Compaction (from Optimum)	
		Minimum	Maximum
Proofroll and subgrade scarification	95% of ASTM D698	-1%	+3%
Acceptable on-site or engineered fill:			
Beneath footings	95% of ASTM D698	-1%	+3%
Beneath slabs	95% of ASTM D698	-1%	+3%
Beneath pavement	95% of ASTM D698	-1%	+3%
Miscellaneous backfill (sidewalk, landscaping, other)	92% of ASTM D698	-1%	+3%

1. Horizontal, level lifts (no sloping lifts) should be placed. Loose fill layers 8-inches thick or less may be placed when heavy, self-propelled compaction equipment is used. Loose fill layers not exceeding 4-inches or less in thickness should be placed when hand-guided equipment (i.e. jumping jack or plate compactor) is used.
2. The moisture content and percent compaction should be measured against the results of a Proctor sample per the corresponding ASTM standard, for each lift of engineered fill during placement via the nuclear density method (ASTM D6938). Should the results of the in-place density tests indicate the specified moisture or compaction limits have not been met, the area represented by the test should be reworked and retested as required until the specified moisture and compaction requirements are achieved. The zone of fill compacted to meet the above criteria should extend at least 5 feet horizontally beyond the building footprint and canopy supports.

Fill Construction Observation and Testing

The exposed subgrade and each lift of compacted fill should be tested, evaluated, and reworked, as necessary, until approved by the geotechnical engineer’s representative prior to placement of

additional lifts. We recommend that each lift of fill be tested for density and moisture content at a frequency of at least:

- One test for 2,500 square feet of compacted fill in building areas;
- One test for every 5,000 square feet in pavement areas;
- A minimum of one test for every fill layer in any area, or;
- One test for every 50 linear feet of compacted utility trench backfill.

Small Utility / Service Line Trench Backfill

Utility trenches are a common source of water infiltration and migration. All utility trenches that penetrate beneath the building should be effectively sealed to restrict water intrusion and flow through the trenches that could migrate below the building. We recommend constructing an effective “trench plug” that extends at least 5 feet out from the face of the building exterior. The plug material should consist of on-site clays. The trench plug material should be placed to surround the utility line. The clay trench plug material should be placed and compacted to comply with the moisture content and compaction recommendations for engineered fill stated previously in this report.

Care should be taken that utility trenches are properly backfilled. Backfilling should be accomplished with properly compacted engineered fill with loose lift thickness of generally 8 inches except for the first lift above the utility pipes, which can be relaxed to 12 inches. Compaction should be accomplished with a hand-held compaction device inside utility trenches. Engineered fill should be compacted in accordance to the *Compaction Requirements* table above.

Additional recommendations for service utility trench backfill are presented in the **Floor Slabs** section of this report.

Grading and Drainage

Grades must provide effective drainage away from the structures during and after construction. Infiltration of water into utility trenches or foundation excavations should be prevented during construction. Water allowed to pond next to the structures can result in greater soil movements than those discussed in this report. These greater movements can result in unacceptable differential floor slab and/or foundation movements. Estimated movements described in this report are based on effective drainage for the life of the structure and cannot be relied upon if effective drainage is not maintained.

Exposed ground should be sloped and maintained at a minimum 10 percent (5 percent where pavement will intersect the building footprint, or less to comply with ADA requirements) away from the building for at least 10 feet beyond the perimeter of the building. After building construction and landscaping, we recommend verifying final grades to document that effective drainage has been achieved. Grades around the structure should also be periodically inspected and adjusted as necessary, as part of the structure’s maintenance program. Where paving or flatwork abuts

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the structure, we recommend a maintenance program to effectively seal and maintain joints to prevent surface water infiltration.

Flatworks and pavements will be subject to post construction movement. Maximum grades practical should be used for paving and flatwork to prevent water from ponding. Allowances in final grades should also consider post-construction movement of flatwork, particularly if such movement would be critical. Where paving or flatwork abuts the structure, effectively seal and maintain joints to prevent surface water infiltration.

Planters located within 10 feet of the structures should be self-contained to prevent water accessing the building and pavement subgrade soils. Locate sprinkler mains and spray heads a minimum of 5 feet away from structure lines. Low volume, drip-style landscape irrigation should not be used near the structure. Collect roof runoff in drains or gutters. Discharge roof drains and downspouts onto pavements and/or flatworks which slope away from the structures or extend down spouts a minimum of 10 feet away from the structures.

Earthwork Considerations

We anticipate that shallow excavations for the proposed construction can be accomplished with conventional earthmoving equipment. Upon completion of filling and grading, the contractor should avoid equipment or foot traffic over prepared subgrade surfaces to a practical extent and should maintain a proper subgrade moisture content prior to construction of concrete or pavement elements.

Surface water should not be allowed to pond on the site and soak into the soil during or after construction. Construction staging should provide drainage of surface water and precipitation away from the building areas. Water that collects over or adjacent to construction areas should be promptly removed, along with any softened or disturbed soils. Surface water control in the form of sloping surfaces, drainage ditches and trenches, and sump pits and pumps will be important to limit ponding and associated delays due to precipitation and/or seepage.

If the subgrade becomes frozen, desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture re-conditioned, and recompact prior to floor slab construction and observed by Terracon.

As a minimum, excavations deeper than 4 feet (if applicable) should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, "Excavations" and its appendices, and in accordance with any applicable local, state, and federal safety regulations. The contractor should be aware that slope height, slope inclination, and excavation depth should in no instance exceed those specified by these safety regulations. Flatter slopes than those dictated by these regulations may be required depending upon the soil conditions encountered and other external factors.

Construction site safety is the sole responsibility of the contractor who controls the means, methods and sequencing of construction operations. Under no circumstances shall the

information provided herein be interpreted to mean that Terracon is assuming any responsibility for construction site safety or the contractor's activities, and such responsibility shall neither be implied nor inferred.

Terracon should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation, proofrolling, placement and compaction of engineered fill, backfilling of excavations, and just prior to construction of building floor slabs.

GROUND IMPROVEMENT

Moderately expansive stiff to very stiff clays were observed at this site which indicate the potential for soil volumetric shrinkage and expansion. Therefore, ground improvement below the existing ground surfaces will be necessary at this site. The following recommendations are based on our understanding that the proposed finished floor elevation is planned to be within 24 inches above existing grades.

Based on the information developed from our field and laboratory programs and on established correlations between swelling and plasticity index values, we estimate that the subgrade soils at this site exhibit a Potential Vertical Rise (PVR) of approximately 2¼ inches. Therefore, we highly recommend that the near-surface soils be prepared as stated below to reduce the potential for slab movement associated with volumetric changes of the near-surface clay soils due to moisture variations to a more acceptable level. The actual movements could be greater if poor drainage, ponded water, and/or other sources of moisture are allowed to infiltrate beneath the structures after construction. Therefore, ground improvement (over-excavation and replacement) below the existing ground surfaces will be necessary at this site. The following recommendations are based on our understanding that the proposed finished floor elevation is planned to be within 24 inches above existing grades.

In order to provide uniform support to the floor slab and canopy structures, reduce the potential for expansive soil movement and help reduce the Potential Vertical Rise (PVR) of the subgrade to about one inch or less, **Terracon recommends that a minimum 5-foot pad of properly placed and compacted structural fill material be constructed immediately below the floor slab of the proposed building and canopy areas.**

Structural backfill soils should be utilized for all grade adjustments within the proposed building area and canopy supports. The subgrade and structural fill soils should be prepared as outlined in the *Fill Material Classification and Requirements* subheading of the **Earthwork** section of this report, which contains material and placement requirements for structural fill, as well as other subgrade preparation recommendations. **The over-excavation and structural fill replacement area should extend a minimum of 5 feet beyond the edges of the building and canopy structures.** Please note that excavations should be sloped at the edges of the excavation as necessary for safety considerations.

SHALLOW FOUNDATIONS

Based on the subsurface conditions observed during our field and laboratory programs, a shallow foundation system consisting of spread/strip footings may be considered to support the proposed building and canopy structures planned for this site, provided the site is prepared as discussed in this report.

Design Parameters

See the **Ground Improvement** section of this report for additional information on over-excavation and replacement recommendations for the subgrade within the building area and canopy supports.

Item	Description
Minimum embedment depth ¹	24 inches below finished grade
Allowable bearing pressures (spread/strip footings) ^{2, 3}	Net dead plus sustained live load – 2,000 psf Net total load – 2,600 psf
Minimum footing width ⁴	Strip Footings – 12 inches Spread Footings – 24 inches
Approximate post-construction settlement ⁵	About 1 inch
Estimated post-construction differential settlement ⁶	Approximately ½ of post-construction settlement
Ultimate coefficient of sliding friction ⁷	350 psf
Passive lateral earth pressure coefficient, k_p ⁸	3.0
Uplift resistance ⁹	Footing weight (150 pcf) Plus backfill soil weight (115 pcf)

1. The footings should bear on properly placed and compacted structural fill soils. Finished grade is the lowest adjacent grade for perimeter footings and final building pad grade for interior footings.
2. Whichever condition yields larger bearing area.
3. Strip footing is defined as a footing at least twice as long as it is wide.
4. The project structural engineer should select the appropriate footing width to maintain a bearing pressure not exceeding those recommended in this table, and to maintain an appropriate clear distance between footings to prevent overlap of soil stress distributions.
5. This estimated post-construction settlement of the shallow footings is without considering the effect of stress distribution from adjacent foundations and assuming proper construction practices are followed. A clear distance between footings of one footing size of the larger of the two footings should not produce overlapping stress distributions and would essentially behave as independent foundations.
6. The post-construction differential settlements may result from variances in subsurface conditions, loading conditions, and construction procedures. The settlement response of the footings will be more dependent upon the quality of construction than upon the response of the foundation loads.
7. Soil friction resistance acting along the base of the footing. The sliding resistance should be neglected when the footings are in uplift condition.

Item	Description
<i>(Continued from page 14)</i>	
8.	As defined by the Rankine method, the passive earth pressure coefficient is $k_p = \tan^2(45^\circ + \phi/2)$, and the passive pressure in psf at footing depth D in feet is $p_p = k_p \gamma D$. A unit weight (γ) not higher than 120 pcf should be considered. Apply a factor of safety of at least 2.0 to this value when designing for lateral force resistance and to account for the effects of seasonal moisture variations in the subgrade soils. The passive pressure along the exterior face of the footings should be neglected within the upper 4 feet due to surface effects and the presence of expansive soils unless pavement is provided up to the edge of the structure. For interior footings, the allowable passive pressure may be used for the entire depth of the footing.
9.	Structural uplift loads on the shallow footings may be resisted by the weight of the foundation plus the weight of any soil directly above the foundation. The ultimate uplift capacity of shallow footings should be reduced by an appropriate factor of safety or applicable resistance reduction factor to compute allowable uplift capacity.

Shallow Foundation Construction Considerations

The near surface soils at this site are medium stiff to stiff, lean clays with varying amounts of sand and calcareous material. Over-excavation and fill replacement operations as described in the **Earthwork** and **Floor Slabs** sections of this report should be performed at this site.

The footings should bear on properly placed engineered fill as recommended in the **Earthwork** and **Ground Improvement** sections of this report. Over excavation for compacted structural fill placement below footings should also extend horizontally a minimum distance of 5 feet beyond the building footprint and canopy supports.

The over-excavation should then be backfilled with engineered fill, placed and compacted as recommended in *Fill Material Classification and Requirements* subheading of the **Earthwork** and **Ground Improvement** sections of this report. Excavations should be sloped as necessary for safety.

The bottom of foundation excavations should be free of water and loose soil prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance.

Additional considerations for the care of the exposed and prepared bearing surfaces should follow the recommendations presented in the *Earthwork Considerations* subheading of the **Earthwork** section of this report.

SEISMIC CONSIDERATIONS

Parameter Description	Value
2021 International Building Code (IBC) Site Class ¹	D

- In general accordance with the 2021 International Building Code, Table 1613.3.3 and ASCE 7, Chapter 20.
- The 2021 International Building Code (IBC) requires a site soil profile determination extending a depth of 100 feet for seismic site classification. The current scope did not include a 100-foot deep soil boring. Borings for the building extended to a maximum depth of approximately 30 feet. Based on IBC, “When the soil properties are not known in sufficient detail to determine the Site class, Site Class D should be used unless the building official or Geotechnical data determines that Site Class E or F likely to be present at the site.” Therefore, based on our knowledge and experience with the local site geology and review of available field and laboratory data, the seismic site class in accordance with IBC should be selected as Site Class D.

FLOOR SLABS

The building area subgrade, fill pad, or building pad within the building footprint should be prepared according to the recommendations presented in **Earthwork**, **Ground Improvement**, and **Shallow Foundations** sections of this report.

Design Parameters

Planned finished grades at the site were not available at the time of this report. We anticipate that the finished floor elevation for the proposed building is planned to be within approximately 24 inches above existing grade. If cuts and/or significant fills are planned, Terracon should be notified to review and/or modify our recommendations given in this subsection.

The near-surface soils at this site generally exhibited expansion potential. These soils can subject the lightly loaded interior floor slab to significant movements (due to shrinking and swelling) with fluctuations in their moisture content. This movement potential is influenced primarily by the properties of the subgrade of soils, as well as the moisture content of the subgrade at the time of construction, overburden pressures, and the stability of the moisture contents throughout the life of the building.

Based on the information developed from our field and laboratory programs and on established plasticity-volumetric swelling potential correlations, we estimate that the subgrade soils at this site exhibit a Potential Vertical Rise (PVR) of up to approximately 2¼ inches. Therefore, we highly recommend that the near-surface soils be prepared as stated below to reduce the potential for slab movement associated with volumetric changes of the near-surface clay soils due to moisture variations to a more acceptable level. The actual movements could be greater if poor drainage, ponded water, and/or other sources of moisture are allowed to infiltrate beneath the structure after construction.

The most common method of subgrade preparation to reduce potential expansion of the subgrade would be to provide a pad of properly placed and compacted select fill beneath the building area. The corresponding decrease in the potential soil movements is primarily a function of the fill pad thickness and the moisture levels of the underlying clay subgrade. While the indicated preparations do not eliminate the potential for soil movement, the magnitude of such movements should be reduced to more acceptable levels through the recommended ground improvement operations.

As previously mentioned in **Earthwork**, to provide uniform support to the floor slab and to reduce the estimated PVR to approximately one inch or less, we recommend that a minimum of 5 feet of properly placed and compacted, low-plasticity, engineered structural fill material be constructed immediately beneath the floor slab. The building pad should extend a minimum of 5 feet beyond the edge of the proposed building. The final exterior grade adjacent to the building should be sloped to promote effective drainage away from the building.

Structural fill should be used for all grade adjustments in the proposed building area. The subgrade soils and structural fill building pad soils should be prepared as outlined in the **Earthwork** section of this report, which contains material and placement requirements for select fill, as well as other subgrade preparation recommendations.

Subgrade soils for flatwork outside of the building that will be sensitive to movement should be prepared as discussed previously. This preparation will be important on surrounding sidewalks and paving immediately adjacent to the structure. If these adjacent flatwork areas are not prepared as stated above for the building area, the estimated PVR for these areas could approach those indicated previously for in-situ conditions. If the soils swell in these areas, this movement could result in significant distress to the adjacent sidewalks and paving and possibly result in reversed drainage (flow of runoff toward the building) around the perimeter of the building.

Description	Recommendation / Values
Floor slab support ¹	Ground-supported (slab-on-grade) on a minimum 5 feet of low-plasticity, engineered structural fill material meeting the <i>Fill Material Classification and Requirements</i> . The floor slab areas should be prepared as presented in the Ground Improvement section of this report.
Subgrade preparation	Properly proofrolled following grading operations as presented in the Site Preparation section of this report. As mentioned previously, if weak areas are identified during proofrolling or the subgrade becomes frozen, desiccated, saturated, or disturbed, we recommend the upper 8 inches of exposed subgrade be scarified and recompactd. The engineered fill / subgrade preparation should extend horizontally a minimum distance of 5 feet beyond the outside edge of the building footprint.
Modulus of subgrade reaction (k-value)	100 pounds per square inch per inch (psi/in), provided the subgrade soils are prepared as presented in this report.

Description	Recommendation / Values
<p><i>(Continued from page 17)</i> Estimated Potential Vertical Rise (PVR)</p>	<p>Provided that at least a 5-foot-thick pad of properly placed and compacted low-plasticity, engineered structural fill is constructed directly beneath the floor slab, we anticipate the PVR will be about 1 inch (assuming an active moisture zone depth of 15 feet, and average moisture conditions). The actual movements could be greater if poor drainage, ponded water, and/or other sources of moisture are allowed to infiltrate beneath the structures after construction.</p>

Floor Slab Construction Considerations

Site grading is generally accomplished early in the construction phase. However, as construction proceeds, the subgrade may be disturbed due to utility excavations, construction traffic, desiccation, rainfall, etc. and corrective action will be required.

Terracon should review the condition of the floor slab subgrades immediately prior to placement of the leveling course material and construction of the slab. Special attention should be given to high traffic areas that were rutted and disturbed earlier and to areas containing backfilled trenches. Areas where unsuitable conditions are located should be repaired by removing and replacing the affected material with properly compacted fill.

Trench backfill used for installation of utility service piping placed beneath slabs should be compacted in accordance with recommendations outlined in **Earthwork**. If open-graded pipe backfill material (i.e. pea gravel or small crushed rock) is used to backfill utility service piping trenches beneath slabs, the trench excavations should be lined with a proper filter fabric to reduce soil migration into the trench zone.

Some differential movement of a slab-on-grade floor system is possible if the subgrade soils become wet (i.e. utility breaches). To reduce potential slab movements, the subgrade soils should be prepared as outlined in **Earthwork**, and all leaks repaired promptly.

PAVEMENTS

Pavement designs are provided for the traffic conditions and pavement life conditions as noted in **Project Description** and in the following sections of this report.

Subgrade Preparation

A critical aspect of pavement performance is site preparation. Proper subgrade preparation, as well as the proper selection and placement of the aggregate base and surface source materials is crucial to the long-term performance of the pavement layers.

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Site grading is generally accomplished early in the construction phase. Subgrade materials at this site will consist of medium stiff to stiff lean clays with varying amounts of sand and calcareous material. The subgrade soils below the aggregate base course for the pavement areas should be exposed and prepared as recommended in the **Earthwork** section of this report to a minimum depth of 8 inches below finished grades.

The subgrade should be carefully evaluated at the time of pavement construction for signs of disturbance or excessive rutting. If disturbance occurs, subgrade should be scarified to a minimum of 8 inches below finished grades and reworked prior to paving. Imported fill material may be used if it meets the selection requirements previously stated.

Vehicular Traffic Loading Conditions

Traffic patterns and anticipated loading conditions were not made available to Terracon at the time of this report. Tabulated below are the assumed traffic frequencies and loads used to design pavement sections for this project. When actual traffic conditions have been determined Terracon should be contacted to review the information to consider a need for revision of the pavement designs and related recommendations.

Pavement Area	Traffic Level	Description
Automobile Parking Areas	Light Duty	Light traffic (Few vehicles heavier than passenger cars, no regular use by heavily loaded two axle trucks.) (ESAL ¹ < 5)
Vehicle Access Driveways and Drive-Thru Areas	Medium Duty	Medium traffic (Similar to Light Duty, including not over 50 loaded two-axle trucks or lightly loaded larger vehicles per day. No regular use by heavily loaded trucks with three or more axles.) (ESAL = 6-20)
Truck Delivery Lanes and Trash Collection Pads	Heavy Duty	Heavy traffic (Including not over 200 heavily loaded two axle trucks plus lightly loaded trucks with three or more axles and no more than 30 heavily loaded trucks with more than three axles per day.) (ESAL = 21-50)

1. Equivalent daily 18-kip single-axle load applications.

If the pavements are subject to heavier loading and higher traffic frequencies than assumed, we should be notified and provided with the information, so that we may review these pavement sections and make revisions, if necessary.

Pavement Design

Pavement design methods are intended to provide structural sections with adequate thickness over the subgrade such that wheel loads are reduced to a level the subgrade can support for an anticipated final serviceability index.

Design of Asphaltic Concrete (AC) pavements are based on the procedures outlined in the National Asphalt Pavement Association (NAPA) Information Series 109 (IS-109). Design of Portland Cement Concrete (PCC) pavements are based upon American Concrete Institute (ACI) 330R-08; Guide for Design and Construction of Concrete Parking Lots.

The following minimum thickness recommendations were based on our estimated traffic loading, the requirements of the pavement design guidelines adjusted to meet local standards and state of practice, the laboratory test results of the sampled soils, and our experience with similar projects and soil conditions. Specific testing (such as CBR's, resilient modulus tests, etc.) was not performed for this project to evaluate the support and characteristics of the subgrade.

Flexible Pavement System (Hot Mix Asphalt Concrete)		
Component	Material Thickness, Inches	
	Light Duty	Medium Duty
Asphaltic Concrete	3.0	4.0
Base Material	8.0	10.0

Rigid pavements will perform better than asphaltic pavements in areas where short-radii turning and braking are expected (i.e. entrance/exit aprons, trash pads) and under heavy duty traffic due to better resistance to rutting and shoving. In addition, rigid pavement will perform better in areas subject to large or sustained loads.

Rigid Pavement System (Portland Cement Concrete)			
Component	Material Thickness, Inches		
	Light Duty	Medium Duty	Heavy Duty
Portland Cement Concrete	5.0	6.0	7.0

Aggregate base layers are not required under rigid pavement sections for structural purposes. For drainage purposes (especially near landscaping areas), a 4-inch aggregate layer may be used. The aggregate layer may consist of *Aggregate Base Course Material* as described in the following report subheading.

Waste dumpster areas should be constructed as heavy-duty concrete pavement. The concrete pad areas should be designed so that the vehicle wheels of the collection truck are supported on

the concrete while the dumpster is being lifted to support the large wheel loading imposed during waste collection.

Please note that **flexible pavement is not recommended for heavy duty traffic**. Exposed subgrade should be properly prepared and compacted prior to flexible base placement per our recommendations presented at the beginning of the **Pavements** section of this report.

Pavement Material Recommendations

Presented below are our recommended material requirements for the various pavement sections.

Hot Mix Asphaltic Concrete Surface Course: The asphaltic concrete surface course should be plant mixed, hot laid, meeting the requirements New Mexico Department of Transportation (NMDOT) 2019 Standard Specifications for Highway and Bridge Construction, Section 423, Type SP-III or SP-IV. Criteria for the job specifications should include compaction to within an air void range of 3 to 7 percent calculated using the maximum theoretical specific gravity of the mix. The asphalt cement content by percent of total mixture weight should be within ± 0.5 percent asphalt cement from the job mix design.

Aggregate Base Course Material (ABCM): ABCM should be composed of crushed limestone or crushed concrete meeting the requirements of NMDOT 2019 Standard Specifications for Highway and Bridge Construction, Section 303, Type I or II. The base material should be compacted to at least 95 percent of the Modified Effort (ASTM D1557) maximum dry density at moisture content within 2 percent of the optimum moisture content as determined by ASTM D1557.

Prime Coat Material: Prime coat should be in conformance with NMDOT 2014 Standard Specifications, Section 408, and applied after compaction of aggregate base course layers.

Portland Cement Concrete Pavement: The materials and properties of reinforced concrete pavement should meet applicable requirements in the ACI Manual of Concrete Practice. The portland cement concrete mix should have a minimum 28-day compressive strength of 3,500 psi.

Rigid Pavement Joints and Reinforcement

We recommend Portland cement concrete pavement details for joint spacing, joint reinforcement, joint sealing, dowels and steel reinforcement be prepared by the Project Civil Engineer in accordance with American Concrete Institute (ACI) guideline 330-21, *Guide for Design and Construction of Concrete Parking Lots and Site Paving*.

Pavement Drainage

Pavement performance is affected by its surrounding environment and should be sloped to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements could saturate the subgrade and contribute to premature pavement deterioration. Additionally, the

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pavement subgrade should be graded to provide positive drainage within the granular base section. Where necessary for this site, appropriate drainage should be provided to remove water from the granular base layer.

The civil engineer should consider the following recommendations in the design and layout of pavements:

- Final grade adjacent to paved areas should slope down from edges at a minimum 2%.
- The subgrade and pavement surface should have a minimum 2% slope to promote proper surface drainage.
- Install joint sealant and seal cracks promptly.
- Line the bottom of landscaped areas in or adjacent to pavements with clay soils reduce moisture migration to the pavement subgrade soils or base course.
- Place properly compacted backfill against the exterior side of curb and gutter.
- Place curb, gutter and/or sidewalk directly on the prepared subgrade soils rather than on unbound granular base course materials.

Pavement Maintenance

The pavement sections represent minimum recommended thicknesses and, as such, periodic maintenance should be anticipated. Therefore, preventive maintenance should be planned and provided for through an on-going pavement management program. Maintenance activities are intended to slow the rate of pavement deterioration and to preserve the pavement investment.

Maintenance consists of both localized maintenance (e.g. crack and joint sealing and patching) and global maintenance (e.g. surface sealing). Preventive maintenance is usually the priority when implementing a pavement maintenance program. Additional engineering observation is recommended to determine the type and extent of a cost-effective program. Please note that even with periodic maintenance, some movements and related cracking may still occur, and repairs may be required.

AGGREGATE SURFACE ROADS

We understand a 300-foot long, medium duty unpaved aggregate surface road is also being considered for the construction of the fire lane located north of the proposed building. Listed below is the unpaved aggregate road component thickness, which may be considered for the design of the fire lane described in this section. The following minimum thickness recommendations were based on our estimated traffic loading of one fire truck up to 70,000 pounds two times a year plus light duty level of loading and number of passes as defined in the **Pavements** section of this report, the requirements of the road design guidelines, the laboratory test results of the sampled soils, and our experience with similar projects and soil conditions.

Specific testing (such as CBR's, resilient modulus tests, etc.) was not performed for this project to evaluate the support and characteristics of the subgrade. If the aggregate road is subject to heavier loading and higher traffic frequencies than those assumed herein, we should be notified and provided with the information, so that we may review the specific loading conditions and make revisions to our recommendations, if necessary.

Unpaved Aggregate Roads	
Layer	Minimum Material Thickness, Inches
	Medium Duty
Aggregate Base Material	14.0

Aggregate Surface Road Material Recommendations

Aggregate Base Course Material: Base material should be composed of crushed limestone or crushed concrete meeting the requirements of NMDOT 2019 Standard Specifications for Highway and Bridge Construction, Section 303, Type I or II. The base material should be compacted to at least 95 percent of the Modified Effort (ASTM D1557) maximum dry density at moisture content within 2 percent of the optimum moisture content as determined by ASTM D1557.

Aggregate Surface Road Drainage and Maintenance

Drainage considerations presented for flexible and rigid pavement are also applicable for unpaved, aggregate-surface roads.

Using an exposed base material surface will require routine maintenance, particularly in turning areas with repeated load applications. At a minimum, these areas will require regrading periodically to maintain effective drainage and correct for rutting, shoving, and erosion. Distress to the exposed base material surface will likely increase during and soon after periods of wet weather. Proper drainage should be provided for the proposed exposed granular pavement system so that infiltration of surface water into the base material and ponding of water in and adjacent to these areas is reduced. In addition, the amount of traffic within the exposed granular pavement system may need to be restricted during periods of wet weather conditions to reduce the potential for problems such as equipment access and distress to the exposed base material surface.

Typical repairs could consist of placing additional gravel in ruts or depressed areas. In some cases, complete removal of distressed portions of the existing section will be required along with replacement of the exposed granular section. Potholes and depressions should not be filled by blading adjacent ridges or high areas into the depressed areas. New material should be added to depressed areas as they develop. Failure to make timely repairs will likely result in more rapid roadway deterioration.

CORROSION POTENTIAL

Many factors can affect the corrosion potential of soil, and the most common factors include moisture content, soil resistivity, and chemical characteristics (pH, chloride ion content, and sulfate ion content). The following subsections outline our recommendations regarding soil corrosivity based on the results shown on the **Exploration and Testing Procedures** and **Exploration Results** section of this report.

Soil Resistivity

Soil resistivity is considered a primary factor in evaluating the corrosivity potential of the soil to steel elements. Laboratory soil resistivity testing results on samples obtained from the top 1½ feet of soil at this site ranged from 1,962 ohm-centimeters to 2,065 ohm-cm, which suggests that the corrosion potential to buried metallic improvements may be characterized as **severely corrosive**.

See the **Exploration and Testing Procedures** section of this report for information about soil resistivity-corrosiveness classification.

Chemical Corrosivity

Sulfate and chloride compound content, as well as the soil pH play additional roles in the corrosion potential of soil. The chemical corrosivity characteristics of the subsurface soils were evaluated by measuring pH, chloride content and sulfate content.

A pH at or above 7 is generally considered relatively passive from a corrosion standpoint. Based on the results of our acidity tests, which yielded alkaline pH values ranging from 7.2 to 7.3.

The measured chloride ion content ranged from 113 to 200 ppm for the samples tested suggests negligible exposure to chloride compounds. The measured water-soluble sulfates concentration ranged from 28 to 31 ppm for the soil samples tested indicating that the samples of the on-site soils have an exposure class of S0 when classified in accordance with Table 19.3.1.1 of the American Concrete Institute (ACI) Design Manual.

See the **Exploration and Testing Procedures** section of this report for information about chemical corrosiveness descriptions.

Considerations for Protection Against Corrosivity

We recommend that at a minimum the contractor exercise stringent care to prevent steel reinforcement and wire ties from breaking the concrete surface of the foundation elements, or that the use of a polyethylene encasement (or similar product) be considered for metallic pipe installation at this site.

A corrosion protection expert should be retained to evaluate the conditions encountered at the site and recommend corrosion prevention steps that should be taken to reduce deterioration of structural elements and pipes.

STORMWATER DETENTION PONDS

Based on the information provided to us, we understand that the proposed depressed landscape areas will be used as storm water ponds.

Based on conversations with Client, the proposed pond will be constructed at an invert elevation of about 5 feet below existing grades. We have assumed the ponds will be constructed with side slopes not exceeding 3:1 (horizontal:vertical). If our understanding is incorrect, or the invert elevations or side slope magnitudes are larger than those discussed and assumed in this report, we should be contacted to provide additional recommendations, if applicable.

The performance of a storm water retention basin depends heavily on the physical properties of the soil. These properties can include the permeability of the soils that will be exposed at the bottom and sides of the pond and the existence or lack of confining (impermeable) layers underneath the more permeable layers.

Four percolation tests were conducted within the areas of proposed landscape or stormwater ponds as shown on the **Exploration Plan** (soil profile of the proposed ponds were explored to a depth of 10 feet each at the location of Borings P-1 and P-2). Tests Perc-1 through Perc-4 were conducted within the on-site soils each at 5 feet below the existing ground surface. The tests yielded soil percolation rates ranging from 5 to 20 minutes per inch. As with any seepage and storage volume detention analysis, a degree of conservatism should be considered when applying a limited number of field test results.

- If the recorded percolation rates are not conducive to meeting the required basin capacity and drainage rates as designed, the soils at the bottom of the ponds should be over-excavated and replaced with rapidly draining soils (poorly graded sands, SP per USCS classification) to a necessary depth that provides the additional necessary retention capacity.
- The side slopes of the storm water retention pond may be constructed using on-site granular soils, provided that appropriate methods are used to control erosion of the side slopes. A slope of 3:1 (horizontal: vertical) or flatter should be used for design purposes.
- Protection of the side slopes from wind and runoff erosion actions can be provided with the placement of a filter fabric on top of the finished grades and cobble-size rock riprap on top of the filter fabric.

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- Periodic maintenance should be performed at the bottom of the pond to remove sediment build-up and prevent excessive accumulation of silt deposits that can decrease or compromise the seepage rates of the pond.

The Project Civil Engineer should ultimately determine the appropriate invert elevation of the pond based on the required capacity, discharge, and infiltration rates and the geotechnical soil parameters provided in this report.

GENERAL COMMENTS

Our work was conducted with the understanding of the project as described in the proposal, and incorporated collaboration with the design team prior to completing our services. The design team collaborated with Terracon to confirm our project assumptions. Revision of our assumptions and understanding of the project to reflect actual conditions was based on those verifications and are reflected in this final report.

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence or collaboration through this system are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact

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excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for cost estimates. Site safety and cost estimating, including excavation support, as well as dewatering requirements or designs, if applicable, are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES

Field Exploration

The following borings and tests were advanced at this site according to the following table:

Number of Borings	Boring Depth (feet) ¹	Advanced Location
7 Borings (B-1 through B-7)	30 (each)	Building
2 Borings (B-8 and B-9)	20 (each)	Shade Canopy
6 Borings (B-10 through B-15)	6½ (each)	Pavement
2 Pond Soil Profile Borings (P-1 and P-2)	10 (each)	Landscape Areas
4 Soil Percolation Tests (Perc-1 through Perc-4)	5 (each)	

1. Below existing ground surface.

The general site vicinity and locations of our soil borings within the project site are provided on the [Site Location and Exploration Plans](#) section of this report. The locations and elevations shown on the [Exploration Plan](#) and on the borings should be considered approximate.

Boring Layout and Elevations: The boring locations were laid out in the field by a Terracon representative using a scaled site plan and a recreational-grade, hand-held GPS equipment (estimated horizontal accuracy of about ±10 feet). Ground surface elevations indicated on the boring logs were estimated from available topographic maps published by the US Geological Survey (USGS). If more precise elevations and boring location coordinates are desired, we recommend our borings be surveyed (by others).

Subsurface Exploration Procedures: We advanced the soil borings using continuous flight augers (hollow stem, 8-inch outside diameter) with a truck-mounted CME 75 drilling equipment up to the aforementioned boring termination depths. The field exploration also included observations for groundwater (where encountered). We obtained non-continuous soil samples by the split-barrel sampling procedure in general accordance with ASTM Standard D1586. We recorded the number of blows required to advance the soil sampler the last 12 inches of the 18-inch sampling interval as the standard penetration resistance value (N-value). This value was used to estimate the in situ relative density of cohesionless soils and consistency of cohesive soils. Our SPT hammers are calibrated in accordance with Terracon's quality standards to document the efficiency of the hammer system on our drill rig. Additional N-value definitions and interpretation information are presented in the [Supporting Information](#).

The samples were tagged for identification, sealed to reduce moisture loss, and taken to our laboratory for further examination, testing, and classification. For safety considerations, borings were backfilled immediately upon the completion of drilling with soil cuttings.

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Our team prepared final boring logs based on the field logs after the completion of our drilling operations. The field logs included visual classifications of the materials encountered during drilling and our interpretation of the subsurface conditions between samples. The final boring logs are presented in **Exploration Results**, represent the engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

Property Disturbance: Our services did not include restoration of the original site conditions beyond backfilling our borings. Excess auger cuttings were disposed of at the site in the general vicinity of each boring. Because backfill material may settle within the boring locations below the surface after some time, we recommend borings be checked periodically, and backfilled, if necessary.

In-situ Soil Testing

Field Percolation: Our field crew also performed four on-site percolation (water infiltration rate) tests (Perc-1 through Perc-4) adjacent to the location of Boring P-1 and P-2 and near each of the locations of Borings B-5 and B-7. These tests were performed by measuring the drop rate of a small volume of water poured inside the cased open hole. The percolation tests were recorded for a maximum of 1 hour after a maximum of 1 hour of saturation.

The soil percolation test was performed via the falling head method at the bottom of each of the percolation test holes. The test was done in general accordance with Percolation Method T ("T" Test), modified for subsurface soil conditions (Code of practice for Wastewater Treatment and Disposal Systems, Environmental Protection Agency) with the field methodology per the Earth Manual of US Bureau of Land Management. and the New Mexico Environmental Improvement District

Please note that the percolation tests provide only a relative approximation of the resistance of the soils to allow water to infiltrate at the performed test depth, does not represent the percolation rates at other depths or locations, and cannot identify potential impermeable (confining) layers that may be present beyond the tested soil types and depths. To look for potential confining layers that may limit the rate of water infiltration, additional or relatively deeper soil profile borings may be needed.

Laboratory Testing

Samples retrieved during the field exploration were taken to the laboratory for further observation by the project geotechnical engineer and were classified in accordance with the Unified Soil Classification System (USCS), a description of which can be found in **Supporting Information**. At that time, the field descriptions were confirmed or modified as necessary and an applicable laboratory testing program was formulated to determine the physical and engineering properties of the subsurface materials.

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Laboratory tests were conducted with the applicable ASTM, local or other accepted standards on selected soil samples and the test results are presented in **Exploration Results**. The laboratory test results were used for the geotechnical engineering analyses, and the development of foundation and earthwork recommendations.

Selected soil samples obtained from the site were tested for the following engineering properties:

- ASTM D2488-09 Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)
- ASTM D2216-10 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
- ASTM D6913/6913M-17 Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis
- ASTM D4318-10e1 Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
- ASTM D7263-09 Standard Test Methods for Laboratory Determination of Density (Unit Weight) of Soil Specimens
- ASTM D4546-08 Standard Test Methods for One-Dimensional Swell or Collapse of Cohesive Soils
- AWWA 4500 H Standard Test Method for pH in Water by Potentiometry
- ASTM G57 Standard Test for Measurement of Soil Resistivity Using the Soil Box Method
- ASTM C1580 Standard Test Method for Sulfate Ion Content in Soil
- ASTM D512 Standard Test Methods for Chloride Ion Content in Water

Soil Resistivity: Soil resistivity, which is a measure of how much resistance the soil poses to electrical current flows, is a primary factor defining the level of soil corrosiveness. Based on published findings presented in *ASTM STP 1013* titled *Effects of Soil Characteristics on Corrosion* (February, 1989), the approximate relationship between soil resistivity and soil corrosiveness may be interpreted as shown in the table below.

Soil Resistivity (ohm-cm)	Classification of Soil Corrosiveness
0 to 900	Very Severely Corrosive
900 to 2,300	Severely Corrosive
2,300 to 5,000	Moderately Corrosive
5,000 to 10,000	Mildly Corrosive
10,000 to >100,000	Very Mildly Corrosive

The corrosivity characteristics due to the electrical resistivity of bulk soil samples obtained from selected samples for this project were evaluated by the *Soil-Box* test procedure in general accordance with ASTM G-57. When using this method, the resistivity of the bulk soil sample is calculated as:

$$\rho_e = \frac{RA}{a}$$

where:

- ρ_e = electrical soil resistivity, ohm-cm;
- R = measured resistance, ohms
- A = cross-sectional area of soil box (perpendicular to current flow), cm² (about 11.5 cm² for standard soil boxes)
- a = inner electrode spacing, cm (about 12.5 cm for standard soil boxes)

The resistivity test results are presented in **Exploration Results**.

Chemical Corrosivity: Chloride and sulfate ion concentration, as well as pH appear to play secondary or catalytic roles in corrosion potential.

High chloride levels tend to reduce soil resistivity (increase soil conductivity) and can increase the possibility of the formation of corrosive (i.e., salty) water that can permeate through the concrete cover into steel reinforcement. Chloride ions can also break down the protective oxide surfaces on stainless steel and aluminum to initiate pitting corrosion. Based on reference literature, the level of exposure to chlorides in soil can be described as follows:

Chloride Ion (Cl ⁻) in soil, ppm	Chloride Exposure
0 to 500	Negligible Concern
500 to 1,500	Moderate
1,500 to 5,000	Considerable
Over 5,000	Severe

Soil acidity is another important factor of soil corrosivity. The lower the pH (the more acidic the environment), the higher the soil corrosivity with respect to buried metallic structures. As soil pH increases above 7 (the neutral value), the soil is increasingly more alkaline and less corrosive to buried steel structures due to protective surface films which form on steel in high pH environments. High pH environments can also solubilize sulfate compounds in the soil and increase the potential for sulfate ion infiltration in the hardened concrete matrix.

Sulfate ions in the soil can be especially aggressive to Portland cement concrete by combining chemically with certain constituents of hydrated cement, principally monosulfoaluminate to form ettringite during the long-term hardening stage of concrete. Ettringite expands upon formation and eventually causes the breakdown of the hydrated cement matrix.

The ACI Design Manual (Section 318, Chapter 19) suggests the levels of exposure of concrete exposed to sulfate-bearing soils can be categorized in exposure classes as shown in the table below.

Geotechnical Engineering Report

Nancy Lopez Elementary School ■ Roswell, New Mexico

February 17, 2023 ■ Terracon Project No. 68225053



Water-Soluble Sulfate (SO ₄ ²⁻) Content		ACI Sulfate Exposure Class
In soil (% by mass)	In water (ppm or mg/kg)	
0 to less than 0.10	0 to 150	S0
0.10 to less than 0.20	151 to 1,500	S1
0.20 to less than 2.00	1,501 to 10,000	S2
2.00 or higher	Over 10,000	S3

Additionally, concrete should be designed in accordance with the provisions of the ACI Design Manual, Section 318, Chapter 19.

SITE LOCATION AND EXPLORATION PLANS

Contents:

Site Location Plan

Exploration Plan

Note: All attachments are one page unless noted above.

SITE LOCATION

Nancy Lopez Elementary School ■ Roswell, New Mexico
February 17, 2023 ■ Terracon Project No. 68225053

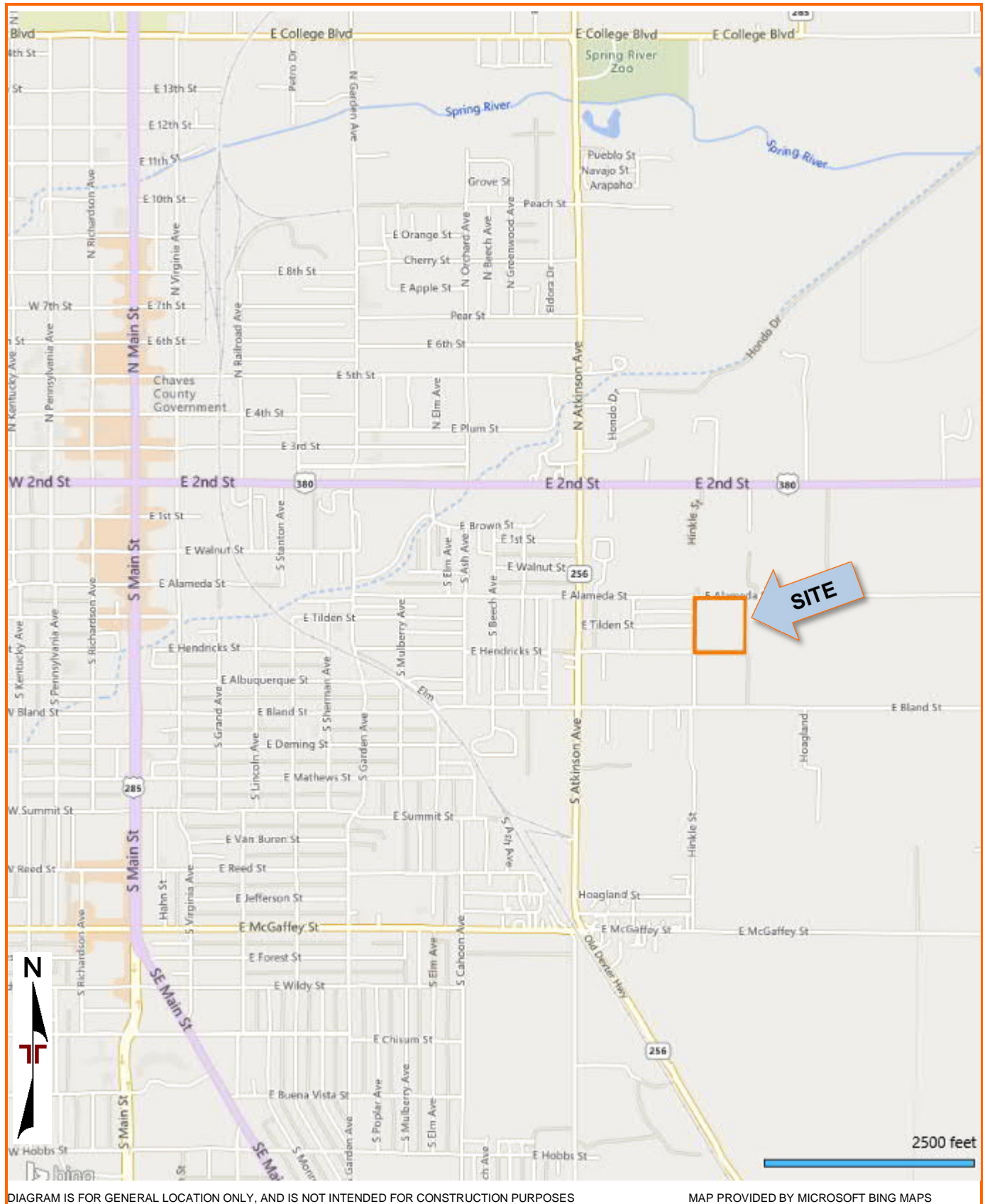


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

EXPLORATION PLAN

Nancy Lopez Elementary School ■ Roswell, New Mexico

February 17, 2023 ■ Terracon Project No. 68225053

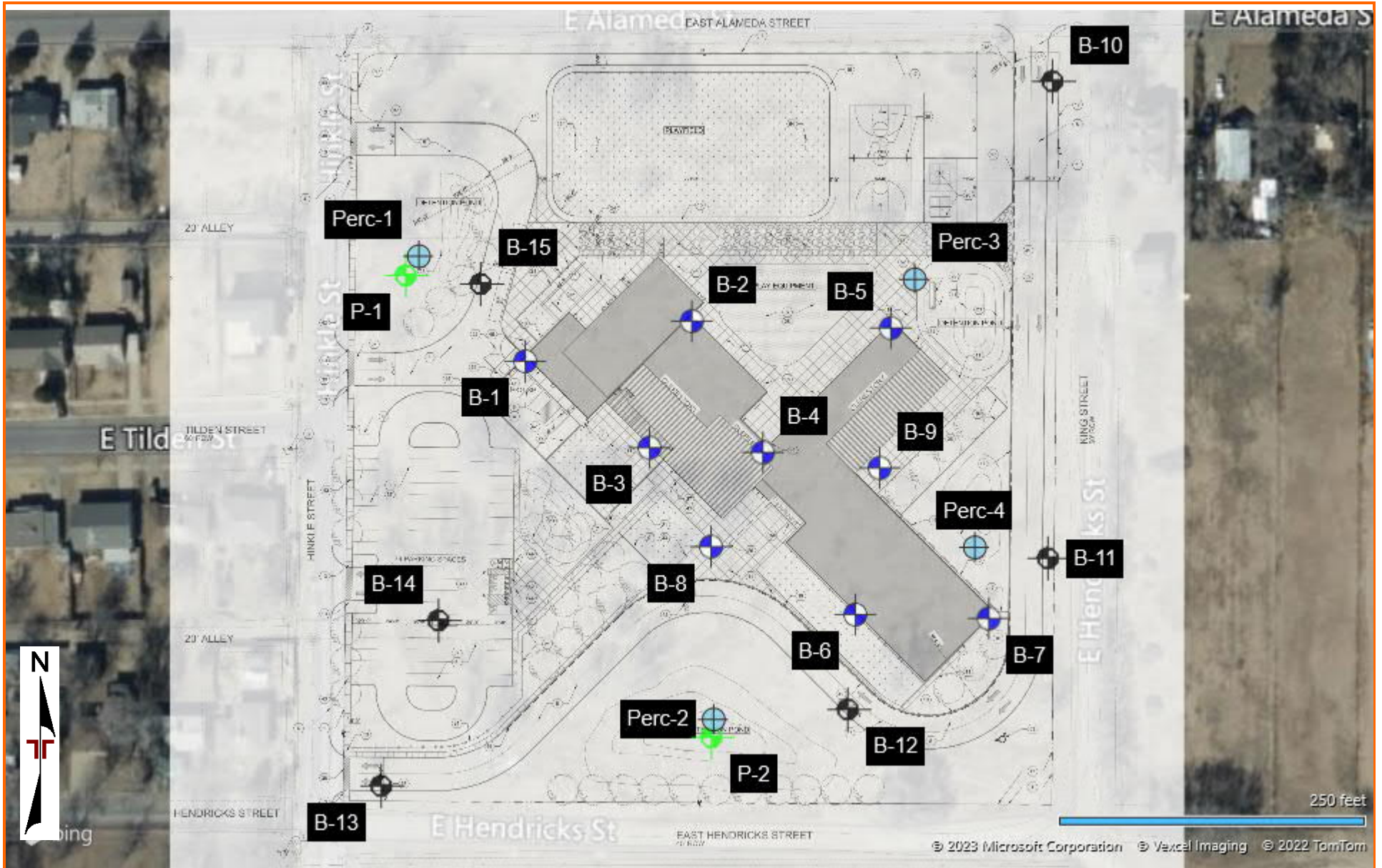


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

EXPLORATION RESULTS

Contents:

Boring Logs (B-1 through B-15, P-1, and P-2)
Grain Size Distribution (4 pages)
Atterberg Limits
Summary of Laboratory Testing Results (2 pages)
Consolidation/Swell (2 pages)
Field Percolation Test Results (2 pages)
Laboratory Soil Corrosivity Test Results

Note: All attachments are one page unless noted above.

Boring Log No. B-1

Model Layer	Graphic Log	Location: See Exploration Plan		Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits		
		Latitude: 33.3898° Longitude: -104.5006°								LL-PL-PI	Percent Fines	
		Depth (Ft.)	Elevation: 3574 (Ft.) +/-									
1		2.0	3572		X		3-4-4 N=8	9.9		30-15-15	69	
					X		10-9	16.2	94			
					X		5-5-6 N=11	9.9				
					X		6-9-14 N=23	12.9		45-15-30	74	
					X		4-4-8 N=12	16.4				
					X		4-6-13 N=19	16.7				
2		19.0	3555		▽		12-12-17 N=29					
		24.0	3550		X		4-5-5 N=10					
3					X		10-7-7 N=14					
		30.0	3544	Boring Terminated at 30 Feet								

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).
See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes

1. Latitude/Longitude locations are approximate and were selected using a recreational-grade GPS device; format is Geodetic NAD 83 Datum, decimal degrees.
2. Surface elevations are only approximate and were estimated from available topographic plans published by USGS.

Water Level Observations

21 feet

Drill Rig
CME-75

Hammer Type
Automatic

Driller
Terracon El Paso

Logged by
MD

Boring Started
12-21-2022

Boring Completed
12-21-2022

Advancement Method
Hollow Stem Auger (8-in O.D.)

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Boring Log No. B-2

Model Layer	Graphic Log	Location: See Exploration Plan		Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits	
		Latitude: 33.3899° Longitude: -104.5001°	Elevation: 3573 (Ft.) +/-							LL-PL-PI	Percent Fines
1		2.0		3571	X		2-2-3 N=5				
		SANDY LEAN CLAY (CL) , brown, medium stiff			X		6-7-8 N=15	9.1		40-15-25	75
		LEAN CLAY WITH SAND (CL) , with calcareous material, trace gravel, tan with light brown, stiff to very stiff			X		8-14	12.0	106		
		- very stiff from 5 to 10 feet			X		4-6-10 N=16	16.6			
		- brownish tan at 7½ feet			X		4-4-6 N=10	18.5		45-15-30	81
		15.0		3558	X		4-10-12 N=22	10.9			
		SANDY LEAN CLAY WITH GRAVEL (CL) , light brown, very stiff									
2		20.0		3553	X		5-6-10 N=16				
		CLAYEY GRAVEL WITH SAND (GC) , light brown, medium dense			▽						
3		24.0		3549			3-3-4 N=7				
		SILTY CLAYEY SAND (SC-SM) , light brown, loose			X		3-4-4 N=8				
		30.0		3543							
		Boring Terminated at 30 Feet									

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).
 See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes

1. Latitude/Longitude locations are approximate and were selected using a recreational-grade GPS device; format is Geodetic NAD 83 Datum, decimal degrees.
2. Surface elevations are only approximate and were estimated from available topographic plans published by USGS.

Water Level Observations

▽ 22 feet

Drill Rig
CME-75

Hammer Type
Automatic

Driller
Terracon El Paso

Logged by
MD

Boring Started
12-22-2022

Boring Completed
12-22-2022

Advancement Method
Hollow Stem Auger (8-in O.D.)

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Boring Log No. B-3

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 33.3896° Longitude: -104.5002°	Depth (Ft.)	Elevation: 3574 (Ft.) +/-	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits			
											LL-PL-PI	Percent Fines		
1		SANDY LEAN CLAY (CL) , brown, medium stiff	2.0	3572	5	X	X	3-3-3 N=6	14.0					
		LEAN CLAY WITH SAND (CL) , with calcareous material, trace gravel, brownish tan, very stiff						8-8-12 N=20	11.3				33-15-18	70
								8-10-15 N=25	12.5					
		- tan, hard at 7½ feet						8-15-18 N=33						
4		FAT CLAY WITH SAND (CH) , trace gravel, light brown, very stiff	10.0	3564	10	X	X	5-7-10 N=17	18.0			50-15-35	82	
		- stiff at 15 feet						4-5-8 N=13						
2		CLAYEY GRAVEL WITH SAND (GC) , light brown, medium dense	19.0	3555	20	X	X	8-5-14 N=19						
3		SILTY CLAYEY SAND (SC-SM) , light brown, loose	24.0	3550	25	X	X	4-4-5 N=9						
		- medium dense below 28½ feet						3-5-11 N=16						
		Boring Terminated at 30 Feet	30.0	3544	30									

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).
See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes

- Latitude/Longitude locations are approximate and were selected using a recreational-grade GPS device; format is Geodetic NAD 83 Datum, decimal degrees.
- Surface elevations are only approximate and were estimated from available topographic plans published by USGS.

Water Level Observations

▽ 26½ feet

Drill Rig
CME-75

Hammer Type
Automatic

Driller
Terracon El Paso

Logged by
MD

Boring Started
12-22-2022

Boring Completed
12-22-2022

Advancement Method
Hollow Stem Auger (8-in O.D.)

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Boring Log No. B-4

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 33.3896° Longitude: -104.4999°	Depth (Ft.)	Elevation: 3574 (Ft.) +/-	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits	
										LL-PL-PI	Percent Fines
1		LEAN CLAY WITH SAND (CL) , trace gravel, brown, stiff - very stiff from 2½ to 10 feet - with calcareous material, trace gravel, brownish tan at 5 feet - light brown, stiff below 10 feet	5		X	4-4-5 N=9	12.1		29-16-13	72	
			5		X	12-14	13.2	89			
			10		X	9-9-9 N=18	10.0		40-14-26	70	
			10		X	4-8-12 N=20	14.5				
			10		X	4-5-7 N=12	16.5				
			15		X	3-4-7 N=11	17.6				
2		CLAYEY GRAVEL WITH SAND (GC) , brown, medium dense	20		X	4-5-8 N=13					
25				X	8-5-4 N=9						
3		SILTY CLAYEY SAND (SC-SM) , light brown, loose	25		▽	2-2-4 N=6					
30				X							
		Boring Terminated at 30 Feet	30								

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).
 See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes

- Latitude/Longitude locations are approximate and were selected using a recreational-grade GPS device; format is Geodetic NAD 83 Datum, decimal degrees.
- Surface elevations are only approximate and were estimated from available topographic plans published by USGS.

Water Level Observations

▽ 25 feet

Drill Rig
CME-75

Hammer Type
Automatic

Driller
Terracon El Paso

Logged by
MD

Boring Started
12-21-2022

Boring Completed
12-21-2022

Advancement Method
Hollow Stem Auger (8-in O.D.)

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Boring Log No. B-5

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 33.3899° Longitude: -104.4996°	Depth (Ft.)	Elevation: 3573 (Ft.) +/-	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits	
										LL-PL-PI	Percent Fines
1		<p>SANDY LEAN CLAY (CL), brown, medium stiff to stiff</p> <p>- stiff at 2½ feet</p> <p>- with calcareous material, trace gravel, brownish tan, very stiff at 5 feet</p> <p>- stiff at 10 feet</p>									
			3-4-4 N=8	10.8							
			6-7	11.7	87						
			5			6-7-11 N=18	9.0		37-13-24	66	
			10			7-14-15 N=29	12.9				
			15			5-6-8 N=14	15.1				
		15.0	3558								
		<p>LEAN CLAY WITH SAND (CL), trace gravel, light brown, very stiff</p>									
		19.0	3554								
3		<p>SILTY CLAYEY SAND (SC-SM), light brown, medium dense</p>									
		24.0	3549								
2		<p>CLAYEY GRAVEL WITH SAND (GC), brown, medium dense</p>									
		30.0	3543		▽		8-10-10 N=20				
		Boring Terminated at 30 Feet		30							

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).
See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes

1. Latitude/Longitude locations are approximate and were selected using a recreational-grade GPS device; format is Geodetic NAD 83 Datum, decimal degrees.
2. Surface elevations are only approximate and were estimated from available topographic plans published by USGS.

Water Level Observations

▽ 26 feet

Drill Rig
CME-75

Hammer Type
Automatic

Driller
Terracon El Paso

Logged by
MD

Boring Started
12-22-2022

Boring Completed
12-22-2022

Advancement Method
Hollow Stem Auger (8-in O.D.)

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Boring Log No. B-6

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 33.3892° Longitude: -104.4997°	Depth (Ft.)	Elevation: 3574 (Ft.) +/-	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits	
										LL-PL-PI	Percent Fines
1		LEAN CLAY WITH SAND (CL) , trace gravel, brown, medium stiff - stiff from 2½ to 7½ feet - with calcareous material, brownish tan at 5 feet - trace gravel, very stiff from 7½ to 15 feet - tan at 10 feet - brownish tan, stiff at 15 feet	5		X	2-2-3 N=5	14.5		30-16-14	73	
			7-11	X	7-11						
			5		X	3-6-7 N=13	8.3				
			10		X	7-11-15 N=26	12.9	43-14-29	70		
			15		X	6-8-14 N=22	18.2				
			15		X	4-4-8 N=12	16.7				
2		CLAYEY GRAVEL WITH SAND (GC) , brown, medium dense	20	3555	▽	7-7-7 N=14					
24.0		3550									
1		SANDY LEAN CLAY (CL) , light brown, stiff	25	3550		4-3-6 N=9					
30.0		3544				4-5-11 N=16					
		Boring Terminated at 30 Feet	30								

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).
 See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes

1. Latitude/Longitude locations are approximate and were selected using a recreational-grade GPS device; format is Geodetic NAD 83 Datum, decimal degrees.
2. Surface elevations are only approximate and were estimated from available topographic plans published by USGS.

Water Level Observations

▽ 21 feet

Drill Rig
CME-75

Hammer Type
Automatic

Driller
Terracon El Paso

Logged by
MD

Boring Started
12-21-2022

Boring Completed
12-21-2022

Advancement Method
Hollow Stem Auger (8-in O.D.)

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Boring Log No. B-7

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 33.3892° Longitude: -104.4993°	Depth (Ft.)	Elevation: 3574 (Ft.) +/-	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits		
										LL-PL-PI	Percent Fines	
1		SANDY LEAN CLAY (CL) , brown, medium stiff - trace gravel, stiff from 2½ to 10 feet - with calcareous material, brownish tan at 5 feet	10.0	3564	X		4-2-3 N=5					
			5		X	●	5-6	21.5	89	33-14-19	66	
			5		X		3-6-7 N=13	11.3				
			5		X		3-6-8 N=14	13.2				
			10		X		4-8-7 N=15	17.5			47-15-32	80
			15		X		7-9-14 N=23	13.8				
3		SANDY LEAN CLAY WITH GRAVEL (CL) , brown, hard SILTY CLAYEY SAND (SC-SM) , light brown, medium dense	19.0	3555	X		17-27-14 N=41					
			24.0	3550	X		3-7-7 N=14					
			30.0	3544	X	▽	5-9-12 N=21					
		Boring Terminated at 30 Feet	30									

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).
 See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes

- Latitude/Longitude locations are approximate and were selected using a recreational-grade GPS device; format is Geodetic NAD 83 Datum, decimal degrees.
- Surface elevations are only approximate and were estimated from available topographic plans published by USGS.

Water Level Observations

▽ 26 feet

Drill Rig
CME-75

Hammer Type
Automatic

Driller
Terracon El Paso

Logged by
MD

Boring Started
12-21-2022

Boring Completed
12-21-2022

Advancement Method
Hollow Stem Auger (8-in O.D.)

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Boring Log No. B-8

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 33.3894° Longitude: -104.5001°	Depth (Ft.)	Elevation: 3574 (Ft.) +/-	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits		
											LL-PL-PI	Percent Fines	
1		SANDY LEAN CLAY (CL) , brown, stiff - very stiff from 2½ to 10 feet - with calcareous material, trace gravel, brownish tan at 5 feet											
			4-4-5 N=9	11.8									
			7-9-10 N=19	8.9									
			8-13	21.8	98	35-14-21	63						
			5-7-11 N=18	13.0									
			10.0	3564	10								
		LEAN CLAY WITH SAND (CL) , tan with light brown, very stiff										49-14-35	80
			15.0	3559	15								
		SANDY LEAN CLAY WITH GRAVEL (CL) , brown, hard											
			18.0	3556	15			5-25-23 N=48	11.6				
2		CLAYEY GRAVEL WITH SAND (GC) , brown, medium dense											
			20.0	3554	20			7-6-6 N=12					
		Boring Terminated at 20 Feet											

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).
 See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes

1. Latitude/Longitude locations are approximate and were selected using a recreational-grade GPS device; format is Geodetic NAD 83 Datum, decimal degrees.
2. Surface elevations are only approximate and were estimated from available topographic plans published by USGS.

Water Level Observations

Advancement Method
 Hollow Stem Auger (8-in O.D.)

Abandonment Method
 Boring backfilled with auger cuttings upon completion.

Drill Rig
 CME-75

Hammer Type
 Automatic

Driller
 Terracon El Paso

Logged by
 MD

Boring Started
 12-21-2022

Boring Completed
 12-21-2022

Boring Log No. B-9

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 33.3895° Longitude: -104.4996°	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits	
									LL-PL-PI	Percent Fines
1		<p>Location: See Exploration Plan</p> <p>Latitude: 33.3895° Longitude: -104.4996°</p> <p>Depth (Ft.) Elevation: 3574 (Ft.) +/-</p> <p>LEAN CLAY WITH SAND (CL), trace gravel, brown, medium stiff</p> <p>- light brown, stiff to very stiff at 2½ feet</p> <p>- stiff at 5 feet</p> <p>- with calcareous material, trace gravel, brownish tan, very stiff at 7½ feet</p> <p>- tan, stiff from 10 to 18 feet</p>								
			5	X	3-3-3 N=6	15.8			29-17-12	74
				X	5-6-9 N=15	9.4				
				X	5-9	11.6	101			
				X	5-9-15 N=24	15.7			46-15-31	76
				X	5-6-8 N=14	19.2				
			15	X	3-4-5 N=9	19.3				
			18.0						3556	
2		<p>CLAYEY GRAVEL WITH SAND (GC), brown, medium dense</p>								
			20.0							3554
		Boring Terminated at 20 Feet								

<p>See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).</p> <p>See Supporting Information for explanation of symbols and abbreviations.</p>	<p>Water Level Observations</p>
<p>Notes</p> <ol style="list-style-type: none"> Latitude/Longitude locations are approximate and were selected using a recreational-grade GPS device; format is Geodetic NAD 83 Datum, decimal degrees. Surface elevations are only approximate and were estimated from available topographic plans published by USGS. 	<p>Drill Rig CME-75</p> <p>Hammer Type Automatic</p> <p>Driller Terracon El Paso</p> <p>Logged by MD</p> <p>Boring Started 12-22-2022</p> <p>Boring Completed 12-22-2022</p>
	<p>Advancement Method Hollow Stem Auger (8-in O.D.)</p> <p>Abandonment Method Boring backfilled with auger cuttings upon completion.</p>

Boring Log No. B-10

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 33.3904° Longitude: -104.4992°	Depth (Ft.)	Elevation: 3571 (Ft.) +/-	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits	
										LL-PL-PI	Percent Fines
1		<p>SANDY LEAN CLAY (CL), brown, stiff</p> <p>- very stiff below 2½ feet</p> <p>- with calcareous material, light brown below 5 feet</p>	5					18.2			
		<p>6.5 3564.5</p> <p>Boring Terminated at 6.5 Feet</p>									

<p>See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).</p> <p>See Supporting Information for explanation of symbols and abbreviations.</p>	<p>Water Level Observations</p>
<p>Notes</p> <ol style="list-style-type: none"> Latitude/Longitude locations are approximate and were selected using a recreational-grade GPS device; format is Geodetic NAD 83 Datum, decimal degrees. Surface elevations are only approximate and were estimated from available topographic plans published by USGS. 	<p>Drill Rig CME-75</p> <p>Hammer Type Automatic</p> <p>Driller Terracon El Paso</p> <p>Logged by MD</p> <p>Boring Started 12-22-2022</p> <p>Boring Completed 12-22-2022</p>
	<p>Advancement Method Hollow Stem Auger (8-in O.D.)</p> <p>Abandonment Method Boring backfilled with auger cuttings upon completion.</p>

Boring Log No. B-11

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 33.3893° Longitude: -104.4992°	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits	
									LL-PL-PI	Percent Fines
1		Depth (Ft.)	Elevation: 3573 (Ft.) +/-							
		SANDY LEAN CLAY (CL) , brown, medium stiff		5	X	2-2-4 N=6	12.8			
		- light brown, stiff below 2½ feet			X	4-4-5 N=9				
		- with calcareous material, brownish tan below 5 feet			X	4-4-6 N=10				
		6.5	3566.5	Boring Terminated at 6.5 Feet						

<p>See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any). See Supporting Information for explanation of symbols and abbreviations.</p> <p>Notes</p> <ol style="list-style-type: none"> Latitude/Longitude locations are approximate and were selected using a recreational-grade GPS device; format is Geodetic NAD 83 Datum, decimal degrees. Surface elevations are only approximate and were estimated from available topographic plans published by USGS. 	<p>Water Level Observations</p> <p>Drill Rig CME-75</p> <p>Hammer Type Automatic</p> <p>Driller Terracon El Paso</p> <p>Logged by MD</p> <p>Boring Started 12-22-2022</p> <p>Boring Completed 12-22-2022</p>
	<p>Advancement Method Hollow Stem Auger (8-in O.D.)</p> <p>Abandonment Method Boring backfilled with auger cuttings upon completion.</p>

Boring Log No. B-12

Model Layer	Graphic Log	Location: See Exploration Plan		Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits	
		Latitude: 33.3890° Longitude: -104.4997°	Elevation: 3574 (Ft.) +/-							LL-PL-PI	
1		LEAN CLAY WITH SAND (CL) , brown, medium stiff - light brown, stiff at 2½ feet - with calcareous material, brownish tan, very stiff below 5 feet		5			2-2-3 N=5 4-5-7 N=12 5-7-9 N=16	10.9			
		Boring Terminated at 6.5 Feet 6.5 3567.5									

<p>See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).</p> <p>See Supporting Information for explanation of symbols and abbreviations.</p> <p>Notes</p> <ol style="list-style-type: none"> Latitude/Longitude locations are approximate and were selected using a recreational-grade GPS device; format is Geodetic NAD 83 Datum, decimal degrees. Surface elevations are only approximate and were estimated from available topographic plans published by USGS. 	<p>Water Level Observations</p> <p>Drill Rig CME-75</p> <p>Hammer Type Automatic</p> <p>Driller Terracon El Paso</p> <p>Logged by MD</p> <p>Boring Started 12-21-2022</p> <p>Boring Completed 12-21-2022</p>
	<p>Advancement Method Hollow Stem Auger (8-in O.D.)</p> <p>Abandonment Method Boring backfilled with auger cuttings upon completion.</p>

Boring Log No. B-13

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 33.3888° Longitude: -104.5010°	Depth (Ft.)	Elevation: 3574 (Ft.) +/-	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits	
										LL-PL-PI	Percent Fines
1		<p>SANDY LEAN CLAY (CL), brown, very stiff</p> <p>- light brown, stiff below 2½ feet</p> <p>- with calcareous material, tan below 5 feet</p>	5		X		6-8-12 N=20	8.7			
		<p>6.5</p> <p style="text-align: right;">3567.5</p> <p>Boring Terminated at 6.5 Feet</p>				X	3-4-6 N=10				
						X	3-4-8 N=12				

<p>See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any). See Supporting Information for explanation of symbols and abbreviations.</p> <p>Notes</p> <ol style="list-style-type: none"> Latitude/Longitude locations are approximate and were selected using a recreational-grade GPS device; format is Geodetic NAD 83 Datum, decimal degrees. Surface elevations are only approximate and were estimated from available topographic plans published by USGS. 	<p>Water Level Observations</p> <p>Drill Rig CME-75</p> <p>Hammer Type Automatic</p> <p>Driller Terracon El Paso</p> <p>Logged by MD</p> <p>Boring Started 12-22-2022</p> <p>Boring Completed 12-22-2022</p>
<p>Advancement Method Hollow Stem Auger (8-in O.D.)</p> <p>Abandonment Method Boring backfilled with auger cuttings upon completion.</p>	

Boring Log No. B-14

Model Layer	Graphic Log	Location: See Exploration Plan		Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits	
		Latitude: 33.3892° Longitude: -104.5008°	Elevation: 3574 (Ft.) +/-							LL-PL-PI	Percent Fines
1		SANDY LEAN CLAY (CL) , brown, medium stiff		2.0	3572	X	4-3-3 N=6	11.2			
		LEAN CLAY WITH SAND (CL) , with calcareous material, tan and light brown, stiff				X	2-4-5 N=9				
		Boring Terminated at 6.5 Feet		6.5	3567.5	X	5-4-6 N=10				

<p>See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any). See Supporting Information for explanation of symbols and abbreviations.</p> <p>Notes</p> <ol style="list-style-type: none"> Latitude/Longitude locations are approximate and were selected using a recreational-grade GPS device; format is Geodetic NAD 83 Datum, decimal degrees. Surface elevations are only approximate and were estimated from available topographic plans published by USGS. 	<p>Water Level Observations</p> <p>Drill Rig CME-75</p> <p>Hammer Type Automatic</p> <p>Driller Terracon El Paso</p> <p>Logged by MD</p> <p>Boring Started 12-22-2022</p> <p>Boring Completed 12-22-2022</p>
<p>Advancement Method Hollow Stem Auger (8-in O.D.)</p> <p>Abandonment Method Boring backfilled with auger cuttings upon completion.</p>	

Boring Log No. B-15

Model Layer	Graphic Log	Location: See Exploration Plan		Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits	
		Latitude: 33.3900° Longitude: -104.5007°	Elevation: 3574 (Ft.) +/-							LL-PL-PI	Percent Fines
1		SANDY LEAN CLAY (CL) , brown, medium stiff		2.0	3572	X	2-2-3 N=5	10.4			
		LEAN CLAY WITH SAND (CL) , light brown, stiff				X	4-5-9 N=14				
		- tan and light brown		6.5	3567.5	X	4-4-10 N=14				
Boring Terminated at 6.5 Feet											

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).
See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes

1. Latitude/Longitude locations are approximate and were selected using a recreational-grade GPS device; format is Geodetic NAD 83 Datum, decimal degrees.
2. Surface elevations are only approximate and were estimated from available topographic plans published by USGS.

Water Level Observations

Advancement Method
Hollow Stem Auger (8-in O.D.)

Abandonment Method
Boring backfilled with auger cuttings upon completion.

Drill Rig
CME-75

Hammer Type
Automatic

Driller
Terracon El Paso

Logged by
MD

Boring Started
12-22-2022

Boring Completed
12-22-2022

Boring Log No. P-1

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 33.3900° Longitude: -104.5009°	Depth (Ft.)	Elevation: 3574 (Ft.) +/-	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits	
										LL-PL-PI	Percent Fines
1		SANDY LEAN CLAY (CL) , brown, stiff	2.0	3572	X		3-4-5 N=9				
		LEAN CLAY WITH SAND (CL) , light brown, stiff			X		4-4-6 N=10				
		- with calcareous material, tan, very stiff at 5 feet			5	X		7-12-12 N=24	10.6		71
		- light brown, stiff below 8½ feet			10	X		5-7-7 N=14			
		Boring Terminated at 10 Feet									

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).
 See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes

1. Latitude/Longitude locations are approximate and were selected using a recreational-grade GPS device; format is Geodetic NAD 83 Datum, decimal degrees.
2. Surface elevations are only approximate and were estimated from available topographic plans published by USGS.

Water Level Observations

Advancement Method
 Hollow Stem Auger (8-in O.D.)

Abandonment Method
 Boring backfilled with auger cuttings upon completion.

Drill Rig
 CME-75

Hammer Type
 Automatic

Driller
 Terracon El Paso

Logged by
 MD

Boring Started
 12-22-2022

Boring Completed
 12-22-2022

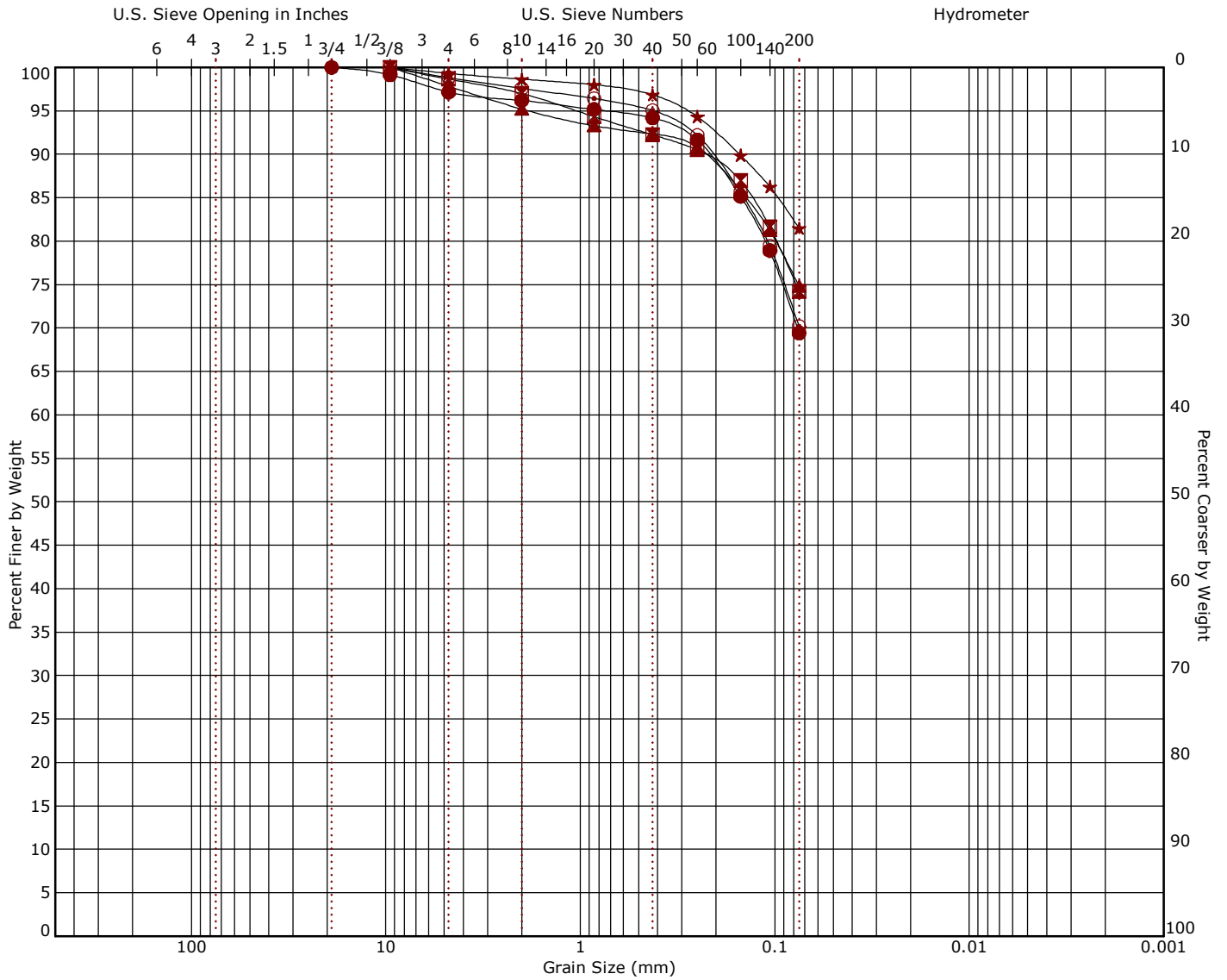
Boring Log No. P-2

Model Layer	Graphic Log	Location: See Exploration Plan Latitude: 33.3889° Longitude: -104.5001°	Depth (Ft.)	Water Level Observations	Sample Type	Field Test Results	Water Content (%)	Dry Unit Weight (pcf)	Atterberg Limits		
									LL-PL-PI	Percent Fines	
1		Depth (Ft.)	Elevation: 3574 (Ft.) +/-								
		SANDY LEAN CLAY (CL) , brown, medium stiff to stiff									
		- light brown, stiff at 2½ feet									
		- with calcareous material, trace gravel, brownish tan, stiff to very stiff at 5 feet									
			5			2-4-4 N=8					
						3-4-6 N=10					
						6-6-9 N=15	9.3			68	
						6-9-9 N=18					
		10.0	3564	10							
Boring Terminated at 10 Feet											

<p>See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any). See Supporting Information for explanation of symbols and abbreviations.</p> <p>Notes</p> <ol style="list-style-type: none"> Latitude/Longitude locations are approximate and were selected using a recreational-grade GPS device; format is Geodetic NAD 83 Datum, decimal degrees. Surface elevations are only approximate and were estimated from available topographic plans published by USGS. 	<p>Water Level Observations</p> <p>Drill Rig CME-75</p> <p>Hammer Type Automatic</p> <p>Driller Terracon El Paso</p> <p>Logged by MD</p> <p>Boring Started 12-21-2022</p> <p>Boring Completed 12-21-2022</p>
<p>Advancement Method Hollow Stem Auger (8-in O.D.)</p> <p>Abandonment Method Boring backfilled with auger cuttings upon completion.</p>	

Grain Size Distribution

ASTM D422 / ASTM C136



Cobbles |
 Gravel |
 Sand |
 Silt or Clay

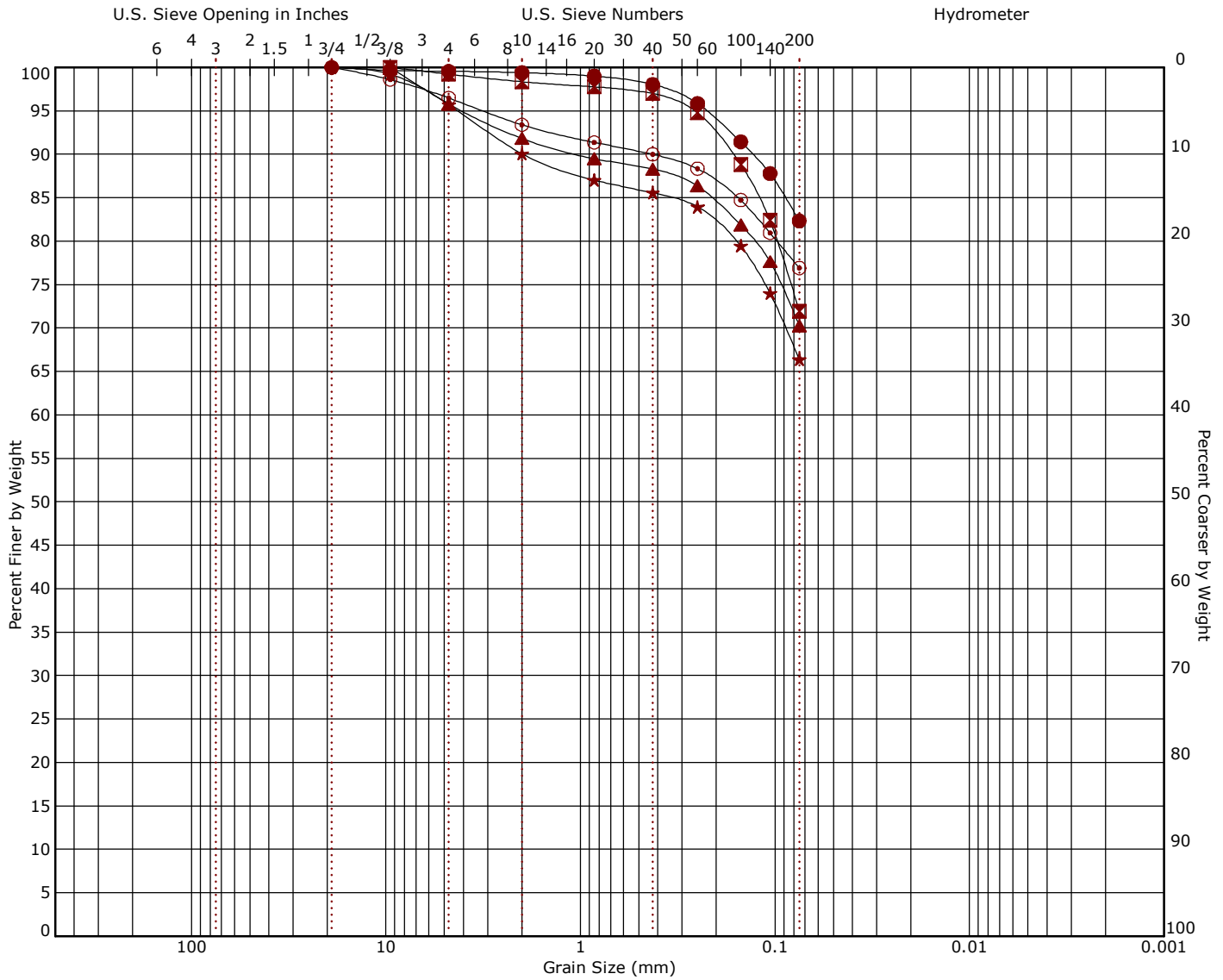
coarse | fine | coarse | medium | fine

Boring ID	Depth (Ft)	Description	USCS	LL	PL	PI	Cc	Cu
● B-1	0 - 1.5	SANDY LEAN CLAY	CL	30	15	15		
☒ B-1	7.5 - 9	LEAN CLAY with SAND	CL	45	15	30		
▲ B-2	2.5 - 4	LEAN CLAY with SAND	CL	40	15	25		
★ B-2	10 - 11.5	LEAN CLAY with SAND	CL	45	15	30		
⊙ B-3	2.5 - 4	LEAN CLAY with SAND	CL	33	15	18		

Boring ID	Depth (Ft)	D ₁₀₀	D ₆₀	D ₃₀	D ₁₀	%Cobbles	%Gravel	%Sand	%Fines	%Silt	%Clay
● B-1	0 - 1.5	19				0.0	2.8	27.7	69.4		
☒ B-1	7.5 - 9	9.5				0.0	1.3	24.4	74.2		
▲ B-2	2.5 - 4	9.5				0.0	2.2	23.0	74.8		
★ B-2	10 - 11.5	9.5				0.0	0.7	17.8	81.5		
⊙ B-3	2.5 - 4	9.5				0.0	1.2	28.7	70.2		

Grain Size Distribution

ASTM D422 / ASTM C136



Cobbles |
 Gravel |
 Sand |
 Silt or Clay

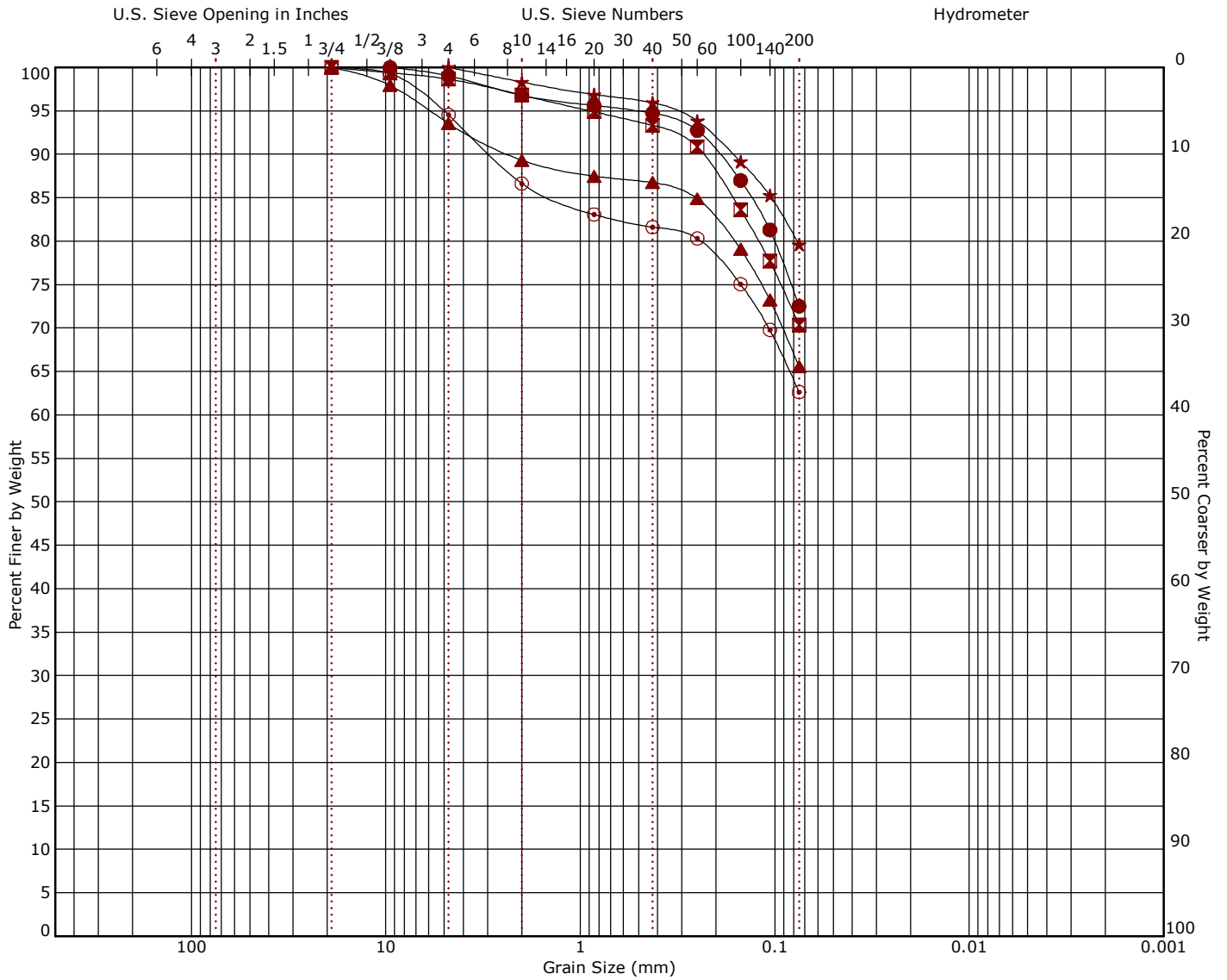
coarse | fine | coarse | medium | fine

Boring ID	Depth (Ft)	Description	USCS	LL	PL	PI	Cc	Cu
● B-3	10 - 11.5	FAT CLAY with SAND	CH	50	15	35		
⊠ B-4	0 - 1.5	LEAN CLAY with SAND	CL	29	16	13		
▲ B-4	5 - 6.5	LEAN CLAY with SAND	CL	40	14	26		
★ B-5	5 - 6.5	SANDY LEAN CLAY	CL	37	13	24		
⊙ B-5	15 - 16.5	LEAN CLAY with SAND	CL	46	15	31		

Boring ID	Depth (Ft)	D ₁₀₀	D ₆₀	D ₃₀	D ₁₀	%Cobbles	%Gravel	%Sand	%Fines	%Silt	%Clay
● B-3	10 - 11.5	19				0.0	0.4	17.2	82.3		
⊠ B-4	0 - 1.5	9.5				0.0	0.8	27.3	71.9		
▲ B-4	5 - 6.5	9.5				0.0	4.2	25.5	70.3		
★ B-5	5 - 6.5	19				0.0	4.3	29.3	66.4		
⊙ B-5	15 - 16.5	19				0.0	3.5	19.6	76.9		

Grain Size Distribution

ASTM D422 / ASTM C136



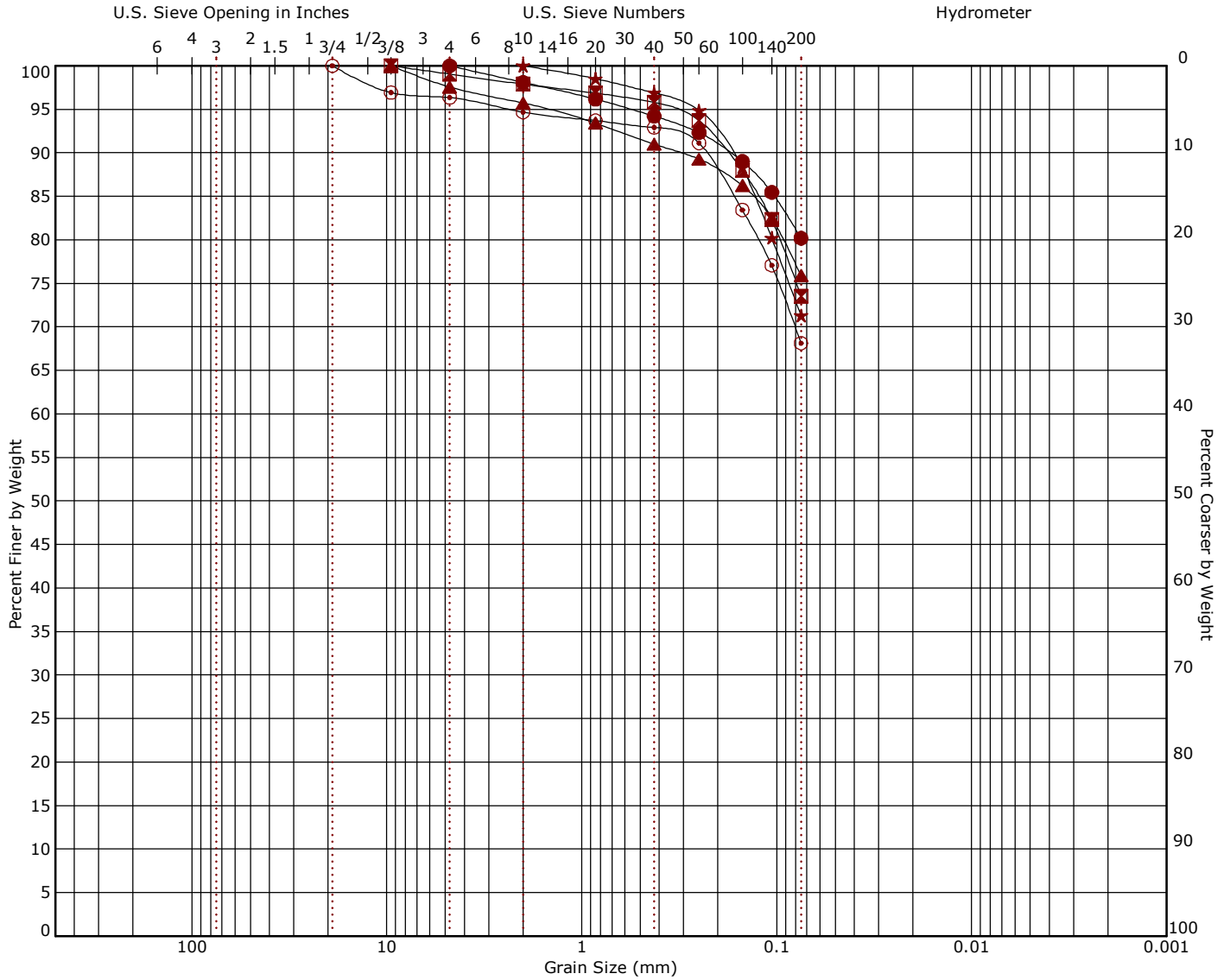
Cobbles	Gravel		Sand			Silt or Clay			
	coarse	fine	coarse	medium	fine				

Boring ID	Depth (Ft)	Description	USCS	LL	PL	PI	Cc	Cu
● B-6	0 - 1.5	LEAN CLAY with SAND	CL	30	16	14		
⊠ B-6	7.5 - 9	LEAN CLAY with SAND	CL	43	14	29		
▲ B-7	2.5 - 3.5	SANDY LEAN CLAY	CL	33	14	19		
★ B-7	10 - 11.5	LEAN CLAY with SAND	CL	47	15	32		
⊙ B-8	5 - 6	SANDY LEAN CLAY	CL	35	14	21		

Boring ID	Depth (Ft)	D ₁₀₀	D ₆₀	D ₃₀	D ₁₀	%Cobbles	%Gravel	%Sand	%Fines	%Silt	%Clay
● B-6	0 - 1.5	9.5				0.0	1.0	26.5	72.5		
⊠ B-6	7.5 - 9	19				0.0	1.3	28.3	70.3		
▲ B-7	2.5 - 3.5	19				0.0	6.5	28.0	65.6		
★ B-7	10 - 11.5	4.75				0.0	0.0	20.4	79.6		
⊙ B-8	5 - 6	19				0.0	5.5	31.9	62.6		

Grain Size Distribution

ASTM D422 / ASTM C136



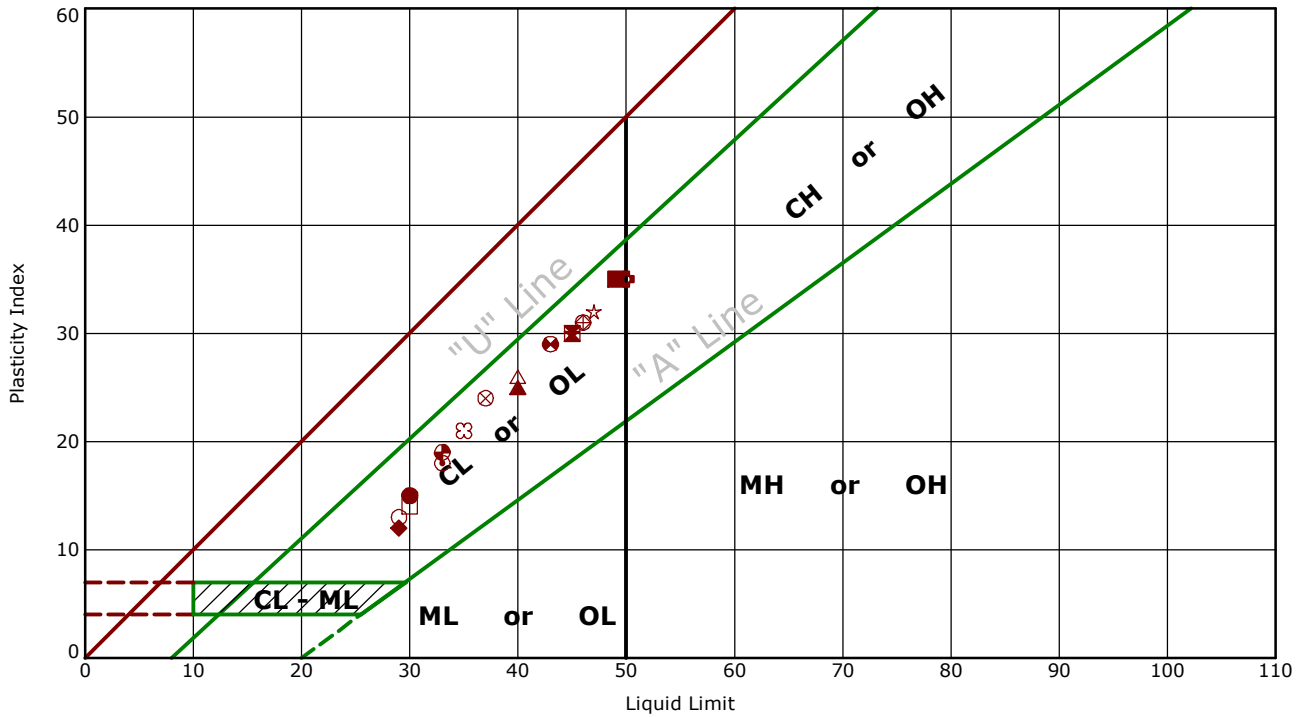
Cobbles	Gravel					Sand			Silt or Clay		
	coarse	fine	coarse	medium	fine						

Boring ID	Depth (Ft)	Description	USCS	LL	PL	PI	Cc	Cu
● B-8	10 - 11.5	LEAN CLAY with SAND	CL	49	14	35		
■ B-9	0 - 1.5	LEAN CLAY with SAND	CL	29	17	12		
▲ B-9	7.5 - 9	LEAN CLAY with SAND	CL	46	15	31		
★ P-1	5 - 6.5	LEAN CLAY with SAND	CL					
⊙ P-2	5 - 6.5	SANDY LEAN CLAY	CL					

Boring ID	Depth (Ft)	D ₁₀₀	D ₆₀	D ₃₀	D ₁₀	%Cobbles	%Gravel	%Sand	%Fines	%Silt	%Clay
● B-8	10 - 11.5	4.75				0.0	0.0	19.8	80.2		
■ B-9	0 - 1.5	9.5				0.0	1.0	25.5	73.5		
▲ B-9	7.5 - 9	9.5				0.0	2.4	21.7	75.9		
★ P-1	5 - 6.5	2				0.0	0.0	28.7	71.3		
⊙ P-2	5 - 6.5	19				0.0	3.6	28.2	68.1		

Atterberg Limit Results

ASTM D4318



	Boring ID	Depth (Ft)	LL	PL	PI	Fines	USCS	Description
●	B-1	0 - 1.5	30	15	15	69.4	CL	SANDY LEAN CLAY
⊠	B-1	7.5 - 9	45	15	30	74.2	CL	LEAN CLAY with SAND
▲	B-2	2.5 - 4	40	15	25	74.8	CL	LEAN CLAY with SAND
★	B-2	10 - 11.5	45	15	30	81.5	CL	LEAN CLAY with SAND
⊙	B-3	2.5 - 4	33	15	18	70.2	CL	LEAN CLAY with SAND
⊕	B-3	10 - 11.5	50	15	35	82.3	CH	FAT CLAY with SAND
○	B-4	0 - 1.5	29	16	13	71.9	CL	LEAN CLAY with SAND
△	B-4	5 - 6.5	40	14	26	70.3	CL	LEAN CLAY with SAND
⊗	B-5	5 - 6.5	37	13	24	66.4	CL	SANDY LEAN CLAY
⊕	B-5	15 - 16.5	46	15	31	76.9	CL	LEAN CLAY with SAND
□	B-6	0 - 1.5	30	16	14	72.5	CL	LEAN CLAY with SAND
⊕	B-6	7.5 - 9	43	14	29	70.3	CL	LEAN CLAY with SAND
⊕	B-7	2.5 - 3.5	33	14	19	65.6	CL	SANDY LEAN CLAY
★	B-7	10 - 11.5	47	15	32	79.6	CL	LEAN CLAY with SAND
⊗	B-8	5 - 6	35	14	21	62.6	CL	SANDY LEAN CLAY
■	B-8	10 - 11.5	49	14	35	80.2	CL	LEAN CLAY with SAND
◆	B-9	0 - 1.5	29	17	12	73.5	CL	LEAN CLAY with SAND
◇	B-9	7.5 - 9	46	15	31	75.9	CL	LEAN CLAY with SAND

Summary of Laboratory Results

BORING ID	Depth (Ft.)	Soil Classification USCS	Water Content (%)	Liquid Limit	Plasticity Index	% Fines	% Sand	% Gravel
B-1	0-1.5	SANDY LEAN CLAY(CL)	9.9	30	15	69.4	27.7	2.8
B-1	2.5-3.5		16.2					
B-1	5-6.5		9.9					
B-1	7.5-9	LEAN CLAY with SAND(CL)	12.9	45	30	74.2	24.4	1.3
B-1	10-11.5		16.4					
B-1	15-16.5		16.7					
B-2	2.5-4	LEAN CLAY with SAND(CL)	9.1	40	25	74.8	23.0	2.2
B-2	5-6		12.0					
B-2	7.5-9		16.6					
B-2	10-11.5	LEAN CLAY with SAND(CL)	18.5	45	30	81.5	17.8	0.7
B-2	15-16.5		10.9					
B-3	0-1.5		14.0					
B-3	2.5-4	LEAN CLAY with SAND(CL)	11.3	33	18	70.2	28.7	1.2
B-3	5-6.5		12.5					
B-3	10-11.5	FAT CLAY with SAND(CH)	18.0	50	35	82.3	17.2	0.4
B-4	0-1.5	LEAN CLAY with SAND(CL)	12.1	29	13	71.9	27.3	0.8
B-4	2.5-3.5		13.2					
B-4	5-6.5	LEAN CLAY with SAND(CL)	10.0	40	26	70.3	25.5	4.2
B-4	7.5-9		14.5					
B-4	10-11.5		16.5					
B-4	15-16.5		17.6					
B-5	0-1.5		10.8					
B-5	2.5-3.5		11.7					
B-5	5-6.5	SANDY LEAN CLAY(CL)	9.0	37	24	66.4	29.3	4.3
B-5	7.5-9		12.9					
B-5	10-11.5		15.1					
B-5	15-16.5	LEAN CLAY with SAND(CL)	18.2	46	31	76.9	19.6	3.5
B-6	0-1.5	LEAN CLAY with SAND(CL)	14.5	30	14	72.5	26.5	1.0
B-6	5-6.5		8.3					
B-6	7.5-9	LEAN CLAY with SAND(CL)	12.9	43	29	70.3	28.3	1.3
B-6	10-11.5		18.2					
B-6	15-16.5		16.7					
B-7	2.5-3.5	SANDY LEAN CLAY(CL)	21.5	33	19	65.6	28.0	6.5
B-7	5-6.5		11.3					
B-7	7.5-9		13.2					
B-7	10-11.5	LEAN CLAY with SAND(CL)	17.5	47	32	79.6	20.4	0.0
B-7	15-16.5		13.8					
B-8	0-1.5		11.8					
B-8	2.5-4		8.9					
B-8	5-6	SANDY LEAN CLAY(CL)	21.8	35	21	62.6	31.9	5.5
B-8	7.5-9		13.0					
B-8	10-11.5	LEAN CLAY with SAND(CL)	15.0	49	35	80.2	19.8	0.0

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. SMART LAB SUMMARY-PORTRAIT 68225053 NANCY LOPEZ ELEMENTARY.GPJ TERRACON_DATATEMPLATE.GDT 1/30/23

PROJECT: Nancy Lopez Elementary School	<p style="font-size: small; margin-top: 5px;">4450 Bataan Memorial E Las Cruces, NM</p>	PROJECT NUMBER: 68225053
SITE: Hinkle Street at Hendricks Street Roswell, New Mexico		CLIENT: Roswell Independent School District Roswell, New Mexico

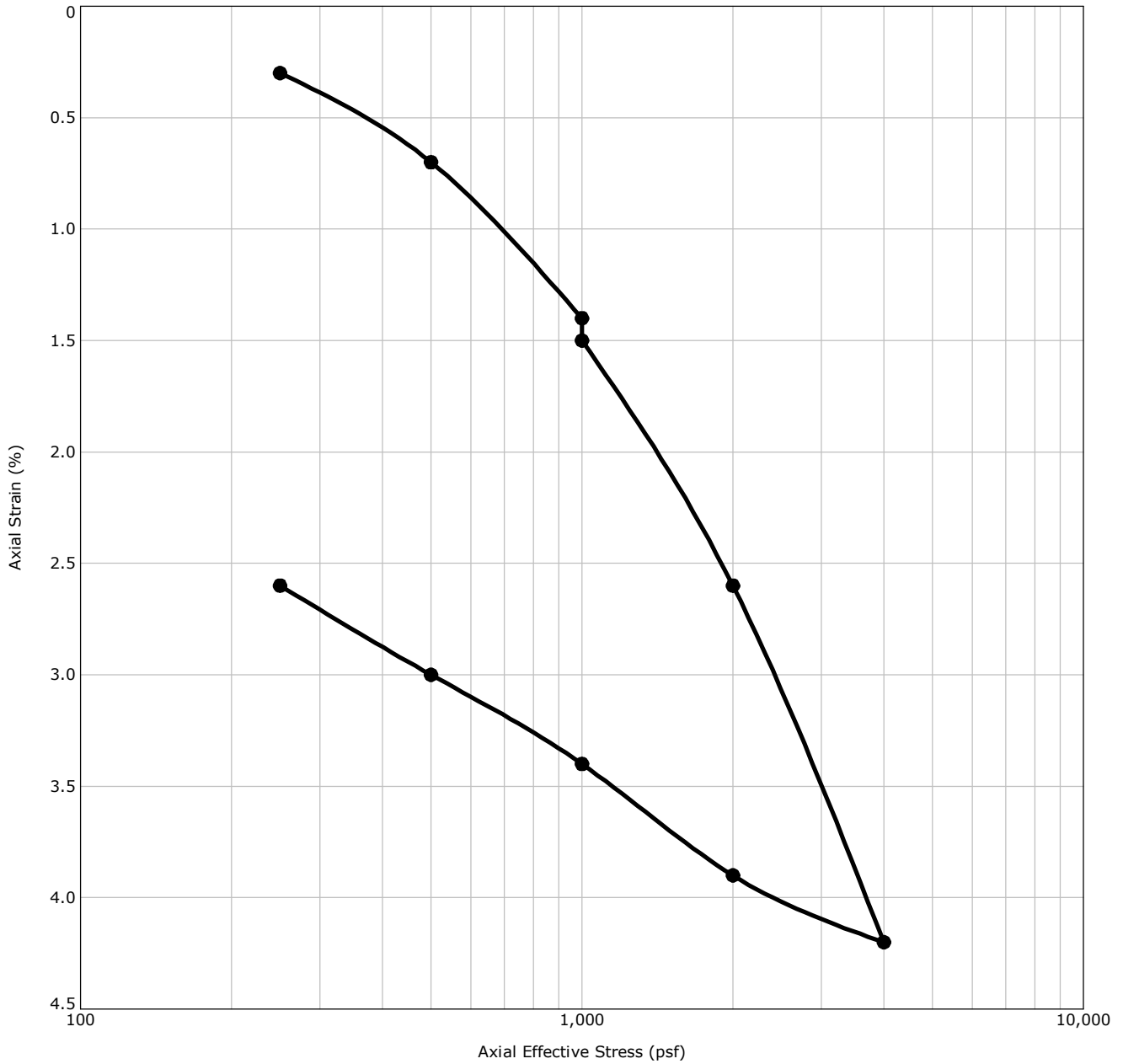
Summary of Laboratory Results

BORING ID	Depth (Ft.)	Soil Classification USCS	Water Content (%)	Liquid Limit	Plasticity Index	% Fines	% Sand	% Gravel
B-8	15-16.5		11.6					
B-9	0-1.5	LEAN CLAY with SAND(CL)	15.8	29	12	73.5	25.5	1.0
B-9	2.5-4		9.4					
B-9	5-6		11.6					
B-9	7.5-9	LEAN CLAY with SAND(CL)	15.7	46	31	75.9	21.7	2.4
B-9	10-11.5		19.2					
B-9	15-16.5		19.3					
B-10	2.5-4		18.2					
B-11	0-1.5		12.8					
B-12	2.5-4		10.9					
B-13	0-1.5		8.7					
B-14	2.5-4		11.2					
B-15	0-1.5		10.4					
P-1	5-6.5	LEAN CLAY with SAND	10.6			71.3	28.7	0.0
P-2	5-6.5	SANDY LEAN CLAY	9.3			68.1	28.2	3.6

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. SMART LAB SUMMARY-PORTRAIT 68225053 NANCY LOPEZ ELEMENTARY.GPJ TERRACON_DATATEMPLATE.GDT 1/30/23

PROJECT: Nancy Lopez Elementary School	<p style="font-size: small; margin: 0;">4450 Bataan Memorial E Las Cruces, NM</p>	PROJECT NUMBER: 68225053
SITE: Hinkle Street at Hendricks Street Roswell, New Mexico		CLIENT: Roswell Independent School District Roswell, New Mexico

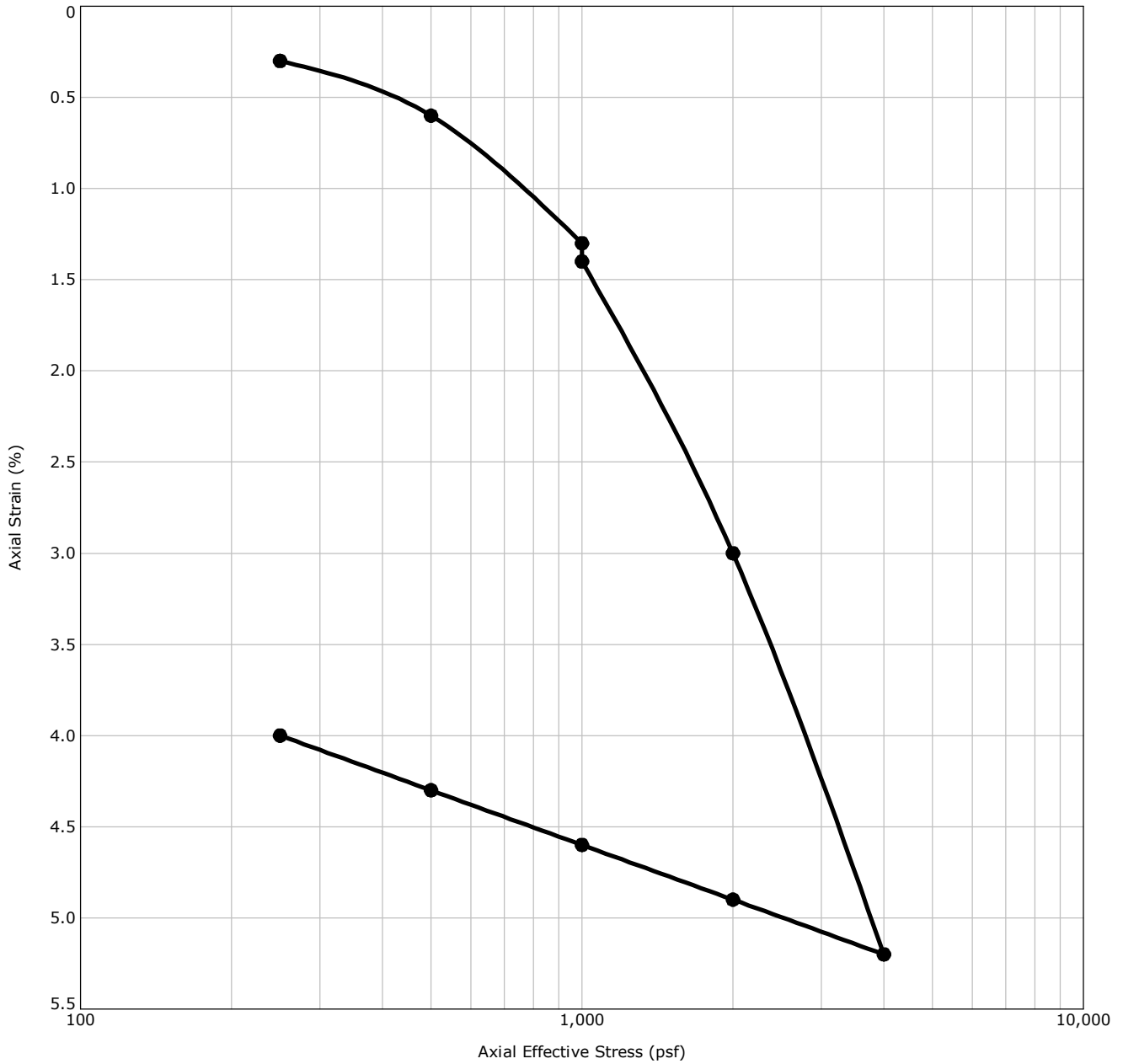
One-Dimensional Consolidation Test D2435



Boring ID	Depth (Ft)	Specimen #	Material Description								USCS	AASHTO
B-1	2.5 - 3.5		LEAN CLAY WITH SAND								CL	
Natural		Initial Dry Density (pcf)	LL	PI	Specific Gravity	Overburden (psf)	P _c (psf)	C _c (% / log stress)	C _r (% / log stress)	Initial Void Ratio		
Saturation (%)	Moisture (%)											
52.4	16.2	93.5			2.79		1,322	5.315	1.362	0.863		

Notes: Water was added at an axial effective stress of 1,000 psf.

One-Dimensional Consolidation Test D2435



Boring ID	Depth (Ft)	Specimen #	Material Description								USCS	AASHTO
B-6	2.5 - 3.5		LEAN CLAY WITH SAND								CL	
Natural		Initial Dry Density (pcf)	LL	PI	Specific Gravity	Overburden (psf)	P _c (psf)	C _c (% / log stress)	C _r (% / log stress)	Initial Void Ratio		
Saturation (%)	Moisture (%)											
28.0	9.3	90.6			2.79		1,232	7.308	0.997	0.923		

Notes: Water was added at an axial effective stress of 1,000 psf.



FIELD PERCOLATION TEST REPORT*

Project No.: 68225053

Project Name: Nancy Lopez Elementary School

Percolation No.	Perc-1
Date Measured	12/23/2022
Measured by	Manny Duenez
Nominal Borehole Depth	5 ft below existing grade
Average Percolation Rate at Nominal Depth	20.0 min/in (4.00 hr/ft)

Percolation No.	Perc-2
Date Measured	12/23/2022
Measured by	Aaron Barrientos
Nominal Borehole Depth	5 ft below existing grade
Average Percolation Rate at Nominal Depth	8.0 min/in (1.60 hr/ft)

Percolation No.	Perc-3
Date Measured	12/23/2022
Measured by	Daniel Rodriguez
Nominal Borehole Depth	5 ft below existing grade
Average Percolation Rate at Nominal Depth	10.0 min/in (2.00 hr/ft)

*In general accordance with Percolation Method T ("T" Test), modified for subsurface soil conditions (Code of practice for Wastewater Treatment and Disposal Systems, Environmental Protection Agency); field methodology per the Earth Manual of US Bureau of Land Management, and New Mexico Environmental Improvement Division.



FIELD PERCOLATION TEST REPORT*

Project No.: 68225053

Project Name: Nancy Lopez Elementary School

Percolation No.	Perc-4
Date Measured	12/23/2022
Measured by	Daniel Rodriguez
Nominal Borehole Depth	5 ft below existing grade
Average Percolation Rate at Nominal Depth	5.0 min/in (1.00 hr/ft)

*In general accordance with Percolation Method T ("T" Test), modified for subsurface soil conditions (Code of practice for Wastewater Treatment and Disposal Systems, Environmental Protection Agency); field methodology per the Earth Manual of US Bureau of Land Management, and New Mexico Environmental Improvement Division.

CHEMICAL LABORATORY TEST REPORT

Project Number: 68225053

Service Date: 02/02/23

Report Date: 02/06/23



10400 State Highway 191

Midland, Texas 79707

432-684-9600

Client

Roswell Independent School District

300 North Kentucky Avenue

Roswell, NM 88201

Project

Nancy Lopez Elementary School

Hinkle Street at Hendricks Street

Roswell, NM

<i>Sample Location</i>	B-2	B-7
<i>Sample Depth (ft.)</i>	0.0-1.5	0.0-1.5
pH Analysis, ASTM - G51-18	7.2	7.3
Water Soluble Sulfate (SO ₄), ASTM C 1580 (mg/kg)	28	31
Chlorides, ASTM D 512 , (mg/kg)	113	200
Resistivity, ASTM G187, (ohm-cm)	2,065	1,962

Analyzed By: *Zach Robertson*
Zach Robertson
Engineering Technician III

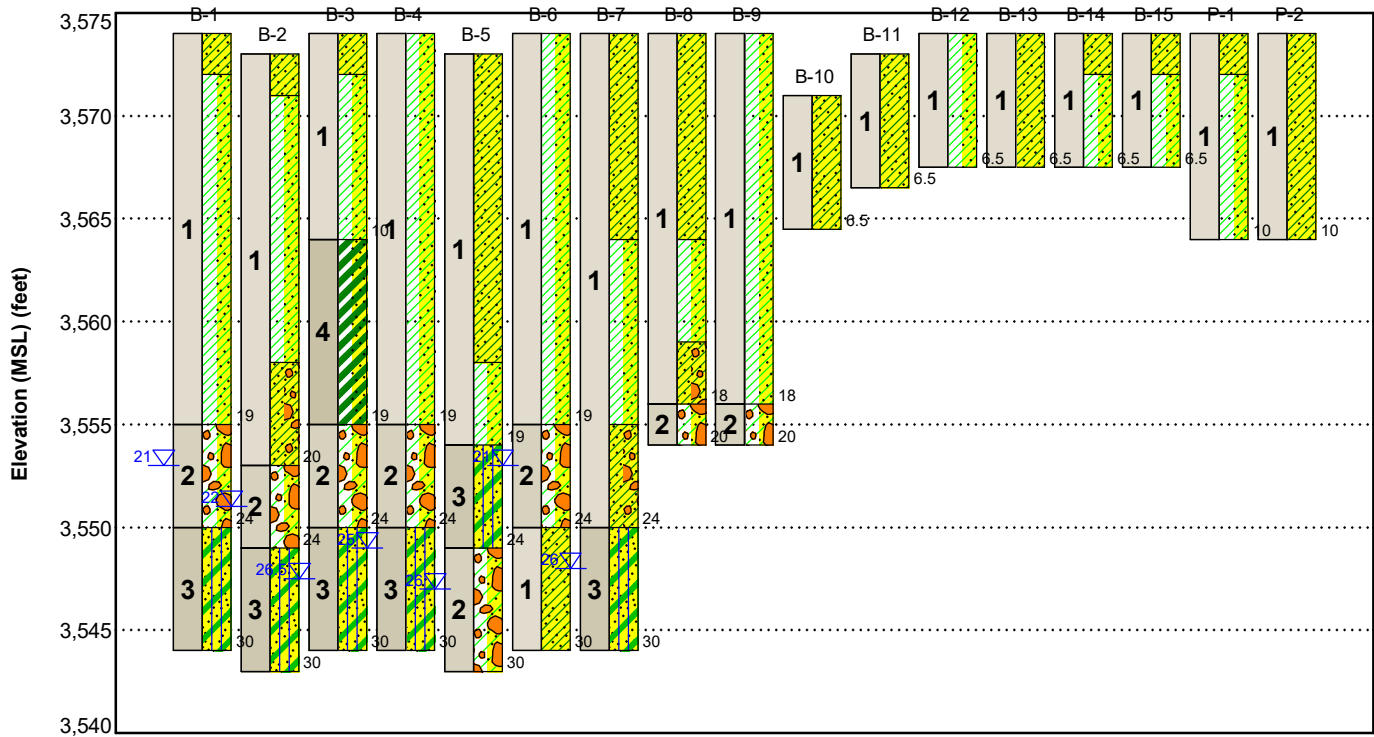
The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

FIGURES

Contents:

GeoModel

GeoModel



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	CL	LEAN CLAY with SAND and SANDY LEAN CLAY with varying amounts of gravel (medium stiff to hard)
2	GC	CLAYEY GRAVEL with SAND (medium dense)
3	SC-SM	SILTY, CLAYEY SAND (loose to medium dense)
4	CH	FAT CLAY with SAND (stiff to very stiff)

LEGEND

- Sandy Lean Clay
- Lean Clay with Sand
- Clayey Gravel with Sand
- Silty Clayey Sand
- Sandy Lean Clay with Gravel
- Fat Clay with Sand

First Water Observation

The groundwater levels shown are representative of the date and time of our exploration. Significant changes are possible over time. Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

NOTES:

Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project. Numbers adjacent to soil column indicate depth below ground surface.

SUPPORTING INFORMATION







Contents:

General Notes

Unified Soil Classification System

Note: All attachments are one page unless noted above.

General Notes

Sampling	Water Level	Field Tests
 Modified California Ring Sampler  Split Spoon	 Water Initially Encountered  Water Level After a Specified Period of Time  Water Level After a Specified Period of Time  Cave In Encountered Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.	N Standard Penetration Test Resistance (Blows/Ft.) (HP) Hand Penetrometer (T) Torvane (DCP) Dynamic Cone Penetrometer UC Unconfined Compressive Strength (PID) Photo-Ionization Detector (OVA) Organic Vapor Analyzer

Descriptive Soil Classification

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

Location And Elevation Notes

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

Strength Terms

Relative Density of Coarse-Grained Soils <small>(More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance</small>			Consistency of Fine-Grained Soils <small>(50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance</small>			
Relative Density	Standard Penetration or N-Value (Blows/Ft.)	Ring Sampler (Blows/Ft.)	Consistency	Unconfined Compressive Strength Qu (tsf)	Standard Penetration or N-Value (Blows/Ft.)	Ring Sampler (Blows/Ft.)
Very Loose	0 - 3	0 - 5	Very Soft	less than 0.25	0 - 1	< 3
Loose	4 - 9	6 - 14	Soft	0.25 to 0.50	2 - 4	3 - 5
Medium Dense	10 - 29	15 - 46	Medium Stiff	0.50 to 1.00	4 - 8	6 - 10
Dense	30 - 50	47 - 79	Stiff	1.00 to 2.00	8 - 15	11 - 18
Very Dense	> 50	> 80	Very Stiff	2.00 to 4.00	15 - 30	19 - 36
			Hard	> 4.00	> 30	> 36

Relevance of Exploration and Laboratory Test Results

Exploration/field results and/or laboratory test data contained within this document are intended for application to the project as described in this document. Use of such exploration/field results and/or laboratory test data should not be used independently of this document.

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A				Soil Classification		
				Group Symbol	Group Name ^B	
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	Gravels: More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels: Less than 5% fines ^C	$Cu \geq 4$ and $1 \leq Cc \leq 3$ ^E	GW	Well-graded gravel ^F	
			$Cu < 4$ and/or $[Cc < 1$ or $Cc > 3.0]$ ^E	GP	Poorly graded gravel ^F	
		Gravels with Fines: More than 12% fines ^C	Fines classify as ML or MH	GM	Silty gravel ^{F, G, H}	
			Fines classify as CL or CH	GC	Clayey gravel ^{F, G, H}	
	Sands: 50% or more of coarse fraction passes No. 4 sieve	Clean Sands: Less than 5% fines ^D	$Cu \geq 6$ and $1 \leq Cc \leq 3$ ^E	SW	Well-graded sand ^I	
			$Cu < 6$ and/or $[Cc < 1$ or $Cc > 3.0]$ ^E	SP	Poorly graded sand ^I	
		Sands with Fines: More than 12% fines ^D	Fines classify as ML or MH	SM	Silty sand ^{G, H, I}	
			Fines classify as CL or CH	SC	Clayey sand ^{G, H, I}	
Fine-Grained Soils: 50% or more passes the No. 200 sieve	Silts and Clays: Liquid limit less than 50	Inorganic:	$PI > 7$ and plots on or above "A"	CL	Lean clay ^{K, L, M}	
			$PI < 4$ or plots below "A" line ^J	ML	Silt ^{K, L, M}	
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay ^{K, L, M, N}
			Liquid limit - not dried			Organic silt ^{K, L, M, O}
	Silts and Clays: Liquid limit 50 or more	Inorganic:	PI plots on or above "A" line	CH	Fat clay ^{K, L, M}	
			PI plots below "A" line	MH	Elastic Silt ^{K, L, M}	
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay ^{K, L, M, P}
			Liquid limit - not dried			Organic silt ^{K, L, M, Q}
Highly organic soils:	Primarily organic matter, dark in color, and organic odor			PT	Peat	

^A Based on the material passing the 3-inch (75-mm) sieve.

^B If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

^C Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

^D Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

$$E \quad Cu = D_{60}/D_{10} \quad Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$$

^F If soil contains $\geq 15\%$ sand, add "with sand" to group name.

^G If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

^H If fines are organic, add "with organic fines" to group name.

^I If soil contains $\geq 15\%$ gravel, add "with gravel" to group name.

^J If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

^K If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

^L If soil contains $\geq 30\%$ plus No. 200 predominantly sand, add "sandy" to group name.

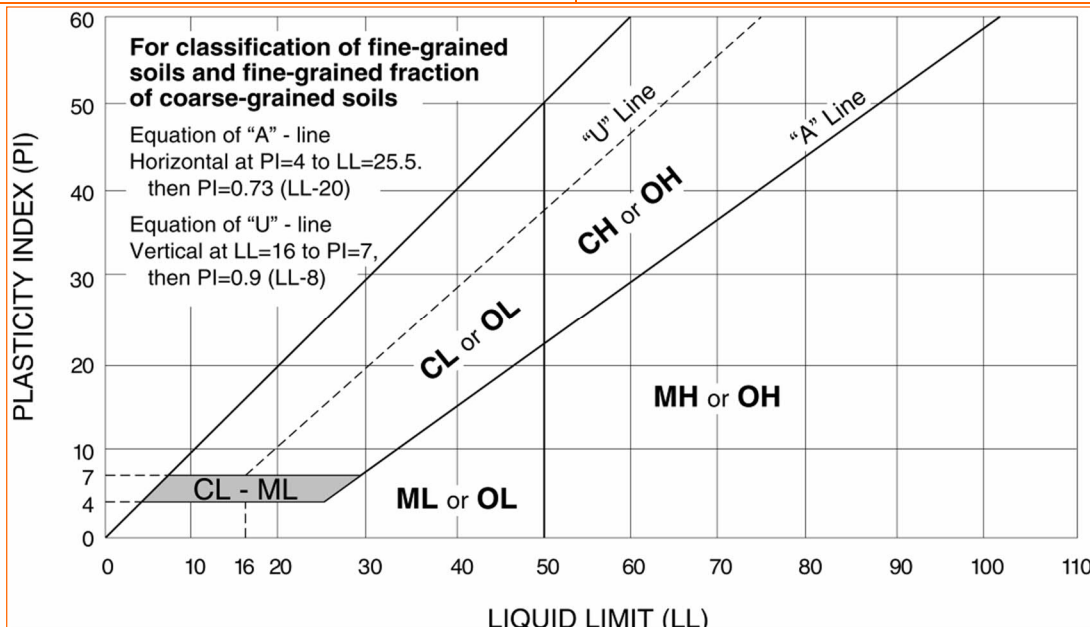
^M If soil contains $\geq 30\%$ plus No. 200, predominantly gravel, add "gravelly" to group name.

^N $PI \geq 4$ and plots on or above "A" line.

^O $PI < 4$ or plots below "A" line.

^P PI plots on or above "A" line.

^Q PI plots below "A" line.



BID FORM (Lump Sum or Unit Price)

BIDDER'S Name and Address: Telephone: Fax: Federal Tax ID #: New Mexico Tax ID #: CID License #
--

ITB NO.: RFP -24-10
 PROJECT NAME: Nancy Lopez Elementary School
 PROJECT NO.: P19-010
 LOCATION: Roswell, New Mexico

This Bid is submitted to Owner:

Roswell Independent School District
 Roswell ISD Central Receiving 508 W.
 College Blvd
 Roswell, NM 88201
 Phone (575) 627-2529

In collaboration with Co-Owner:

Public School Capital Outlay
PUBLIC SCHOOL FACILITIES AUTHORITY
 1312 Basehart Road, SE
 Suite 200
 Albuquerque, NM 87106
 Phone (505) 843-6272

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an agreement with the Owner in the form included in the Bidding Documents to perform and furnish all Work as specified or indicated in the Bidding Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.

2. The Bidder accepts all of the terms and conditions of the Invitation for Bid and Instructions to Bidders, including without limitation those dealing with the disposition of bid security and other Bidding Documents. This Bid will remain subject to acceptance for forty-five (45) days after the day of Bid opening. The Bidder shall sign and submit the Agreement between Owner and Contractor (hereinafter called Agreement) with the Bonds and other documents required by the Bidding Requirements within fifteen (15) days after the date of the Owner's Notice of Award.

3. This Project has **NO CASH ALLOWANCES**, and **NO ALTERNATES**. There is a **BASE BID** and one bid lot: **BID LOT #1**.

4. In submitting this Bid, the Bidder represents, as more fully set forth in the Agreement, that:

A. the Bidder has examined copies of all the Bidding Documents and of the following Addenda (receipt of all of which is hereby acknowledged):

- | | | |
|-----------|--------------|-------------|
| No. _____ | Title: _____ | Date: _____ |
| No. _____ | Title: _____ | Date: _____ |
| No. _____ | Title: _____ | Date: _____ |
| No. _____ | Title: _____ | Date: _____ |
| No. _____ | Title: _____ | Date: _____ |
| No. _____ | Title: _____ | Date: _____ |

- B. the Bidder has familiarized himself with the nature and extent of the Bidding Documents, Work, site, locality, and all local conditions, laws, and regulations that in any manner may affect cost, progress, performance, or furnishing of the Work;
- C. the Bidder has carefully studied all reports and drawings of subsurface conditions which are identified in the Information Available to Bidders and accepts the determination set forth in the Information Available to Bidders of the extent of the technical data contained in such reports and drawings upon which the Bidder is entitled to rely;
- D. the Bidder has correlated the results of all such observations, examinations, investigations, explorations, tests, reports, and studies with the terms and conditions of the Bidding Documents;
- E. the Bidder has given the Design Professional written notice of all conflicts, errors, and discrepancies that he has discovered in the Bidding Documents, and the written resolution thereof by the Design Professional is acceptable to the Bidder;
- F. this Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm, or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation; the Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; the Bidder has not solicited or induced any person, firm, or corporation to refrain from bidding; and the Bidder has not sought by collusion to obtain for himself any advantage over any other Bidder or over the Owner;
- G. the Bidder acknowledges that he has attended any mandatory pre-bid conference scheduled by the Owner or the Design Professional pertaining to this project;
- H. the Bidder agrees to show clearly on the envelope in which the Bid is submitted the Project Name and Number, and Invitation to Bid Number; and,
- I. the Bidder will complete the Work for the following price(s) (**do not include any gross receipts tax in the price(s)**).

5. Bids shall be presented in the form of a total Base Bid proposal under a Lump Sum Contract plus additive alternates (if any) that are selected by the Owner. A bid must be submitted on all bid items, alternates (if any), and bid lots (if any); segregated bids will not be selected by the Owner.

A. LUMP SUM PRICE (please use typewriter or print legibly in ink) Base Bid (use words):

(\$ _____)

B. BID LOT #1 ADD (please use typewriter or print legibly in ink) BID Lot #1 (use words):

Provide a price for all required labor and material for the complete installation of Public Infrastructure Plans for Hinkle Street and Alameda Street, Roswell, NM in accordance with the following Construction Documents:

- Sheet 1 of 6 Cover Sheet
- 2 of 6 Alameda Subdivision Topographic Survey
- 3 of 6 Alameda Plan Sheet
- 4 of 6 Hinkle Street Plan Sheet
- 5 of 6 Miscellaneous Details
- 6 of 6 Miscellaneous Details

(\$ _____)

6. The Bidder agrees that:

- A.** The Work to be performed under this Contract shall be commenced not later than ten (10) consecutive days after the date of written Notice to Proceed, and that Substantial Completion shall be achieved not later than _____ days after the date of written Notice to Proceed, except as hereafter extended by valid written Change Order by the Owner.
- B.** Should the Contractor neglect, refuse, or otherwise fail to complete the Work within the time specified, the Contractor agrees to pay to the Owner in partial consideration for the award of this Contract the amount of One Thousand Five Hundred Dollars (\$1,500) per consecutive day, not as a penalty, but as liquidated damages for such breach of the Contract.
- C.** The above prices shall include all labor, materials, removal, overhead, profit, insurance, taxes (**not including gross receipts tax**), etc., to cover the finished work of the several kinds called for. Changes shall be processed in accordance with the Contract Documents.
- D.** It is understood that the Owner reserves the right to reject any or all Bids and to waive any technical irregularities in the bidding.
- E.** Once the roofing portion of the Work commences, the Contractor shall ensure the roofing portion of the Work is complete including punch lists within 100 consecutive days. Unless Contractor's failure to complete the roof portion of the Work within this time limit is justified for reasons allowed under the Contract, the Contractor shall reimburse the Owner for all related additional expenses incurred by the Owner due to such failure. These expenses may include but may not be limited to the additional costs to Owner related to roof consulting services.

7. The following documents are attached to and made a condition of this Bid:

- A.** Bid Security with Agent's Affidavit;
- B.** Subcontractors Listing; and,
- C.** Other (list):

8. The terms used in this Bid and the Bidding and Contract Documents which are defined in the Conditions of the Construction Contract (General, Supplementary, and Other Conditions), included as part of the Bidding Documents, have the meanings assigned to them in those Conditions.

9. The Bidder is a(n):

A. INDIVIDUAL;

By: _____
(Individual's Signature)
Doing business as: _____
Business address: _____

Telephone: (____) _____

FAX: (____) _____

B. PARTNERSHIP:

By: _____
(Firm Name)

(General Partner's Signature)
Business address: _____

Telephone: (____) _____

FAX: (____) _____

C. CORPORATION:

Corporation Name: _____

State of Incorporation: _____

By _____ Title: _____
(Print Name of Person Authorized to Sign)

* _____
Signature of Authorized Person

If a New Mexico Corporation: _____
NM Certificate of Incorporation Number

If a Foreign Corporation: _____
NM Certificate of Authority Number

Attest (Secretary): _____

Business address _____

Telephone: (____) _____

FAX: (____) _____



or,

D. JOINT VENTURE:

By _____
(Name)

Address: _____

Telephone: (____) _____

FAX: (____) _____

By _____
(Name)

Address: _____

Telephone: (____) _____

FAX: (____) _____

By _____
(Name)

Address: _____

Telephone: () _____

FAX: () _____

Each Joint Venturer must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated in the appropriate category.

BIDDER MUST FILL IN THE FOLLOWING (if none, write none)

NM License Number _____ License Classification: _____

Dept. of Workforce Solutions Minimum Wage Act Registration Number (DWS#)

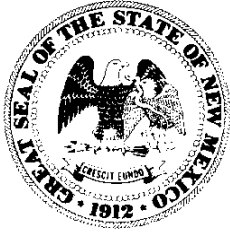
Resident Contractor's Preference Number: _____

OR

Veteran Contractor's Preference Number: _____

Please attach a copy of your valid preference certificate to the Bid Form.

AGENT'S AFFIDAVIT



THIS FORM MUST
BE USED BY SURETY

(To be filled in by Agent)

STATE OF _____)
) ss.
COUNTY OF _____)

_____, being first duly sworn, deposes and says that
he /

she is the duly appointed agent for _____ and
is _____
licensed in the State of New Mexico.

Deponent further states that a certain bond was given to indemnify the State of New
Mexico in connection with the construction of

dated the _____ day of _____, 20__, executed by
Contractor, as principal, and _____, as surety, signed by
this Deponent; and Deponent further states that said bond was written, signed, and
delivered by him/her; that the premium on the same has been or will be collected by
him/her; and that the full commission thereon has been or will be retained by him/her.

Subscribed and sworn to before me, a notary public in and for the County of,
, this _____ day of _____, 20__.
Notary Public

My Commission Expires:

AGENT'S ADDRESS:

Telephone

**LISTING FORM 00 4334
ATTACH TO LETTER OF SUBMITTAL
In the Technical Proposal**

**SUBCONTRACTOR
QUALIFICATIONS QUESTIONNAIRE**

THRESHOLD: \$50,000 OR 5% OF ESTIMATE WHICHEVER IS GREATER

DP/AE ESTIMATE OF TOTAL PROJECT COST: \$ _____

QAULIFICATION THRESHOLD FOR THIS PROJECT: \$ _____

1. The using agency has the right and requires that the contractor provide subcontractor qualifications from the subcontractors listed below regardless of the value of the subcontract.
2. Also, Per NMAC 1.4.8.12 D. (2): Subcontractor qualification questionnaires shall be required for all subcontractors identified in the Technical Proposal pursuant to the subcontractor listing requirements 1.4.8.13 NMAC, where the value of the subcontract is fifty thousand (\$50,000) or five percent (5%) whichever is greater.

This Subcontractor Questionnaire Listing Form shall be included in the Technical Proposal, in **TAB 2A**. **Note:** Either submit this form or an entire package of all Subcontractor Qualification Statements at time of proposal submission.

Reminder: The General Contractor *may* be given hours from the date and time of the submission of the Request for Proposal, to produce copies of the Subcontractor Qualifications Questionnaires listed below to the Procurement Manager.

SUBCONTRACTOR	ENTITY NAME
Mechanical	
Electrical	
Plumbing	
Roofing	

**COMBINED
LIST OF SUBCONTRACTORS
and
ASSIGNMENT OF ANTITRUST CLAIMS
by
CONTRACTOR, SUBCONTRACTORS,
SUBSUBCONTRACTORS, and SUPPLIERS**

EXAMPLE TRADES AND SUPPLIERS: SITE WORK, CONCRETE, MASONRY, FRAMING, LUMBER, STEEL, STEEL FABRICATION, ROOFING, EXTERIOR INSULATION AND FINISH, DRYWALL, DOORS, GLASS AND GLAZING, PLASTER, PAINTING, CARPET, RESILIENT, CONVEYING SYSTEMS, HVAC, CONTROLS, PLUMBING, SHEET METAL, ELECTRICAL

1. Subcontractor Listing shall be included with Bid as a condition of the Bid and be fully complete with regards to all Subcontractors providing services valued at \$5,000.00 or more, or one-half of one percent of the architect's or engineer's estimate of the total project cost, not including alternates, whichever is greater pursuant to Section 13-4-34, NMSA 1978.

Listing Threshold for this Project: \$115,000.00

a. Subcontractor Listing shall be expanded after Bid by apparent low bidder if Awarded, and before Contract, to include major Suppliers and, each entity listed shall be signed by individual empowered to obligate Supplier, Subcontractor, or Subsubcontractor.

b. Subcontractor Listing shall also be expanded after Bid by apparent low bidder if Awarded, and before Contract, to include the Department of Workforce Solutions labor enforcement fund registration number. See the Department of Workforce Solutions web site at www.dws.state.nm.us under "Public Works" for registration form, listings and information.

c. See Instructions to Bidders, Section 00 2113 Paragraph 4.5, Subcontractors, for rules regarding changes in this list after bidding.

2.

PROJECT NAME: Nancy Lopez Elementary School

INVITATION TO BID NUMBER: INVITATION TO BID NUMBER: RFP 24-10

The undersigned agrees that any and all claims which the firm may have or may inure to it for overcharges resulting from antitrust violations as to goods, services, and materials purchased in connection with the above-referenced project are hereby assigned to the Owner, but only to the extent that such overcharges are passed on to the Owner. It is agreed that the firm retains all rights to any such antitrust claims to the extent of any overcharges not passed on to the District, including the right to any treble damages attributable thereto.

INVITATION TO BID NUMBER:
RFP 24-10

Sealed bid opening date:
 (DATE & TIME)
(NAME) SCHOOL DISTRICT

Subcontractor Listing

*Signature not required until after Bid but before Award

TYPE OF WORK	ENTITY NAME	CITY & STATE	Labor enforcement fund registration # (if over \$60,000)	SIGNATURE *
SITE WORK				
CONCRETE				
MASONRY				
FRAMING				
STEEL ERECTION				
ROOFING				
INSULATION				
DRYWALL				
GLAZING				
PLASTER				
FLOORING				
PAINTING				
FURNISHINGS				
LANDSCAPE				
ELEVATOR				
HVAC				
CONTROLS				
PLUMBING				
ELECTRICAL				
SPECIAL SYST.				

TYPE OF WORK	ENTITY NAME	CITY & STATE	Labor enforcement fund registration # (if over \$60,000)	SIGNATURE *

PREQUALIFICATION

GENERAL

The Contractor represents to the Owner that the Contractor:

1. is financially solvent, able to pay debts, and has sufficient working capital to complete the Work;
2. is able to furnish the plant, tools, materials, supplies, equipment, skilled labor and sufficient experience and competence required to complete the Work equal to or exceeding industry standards;
3. shall, prior to bid, be properly licensed according to the requirements of the Construction Industries Licensing Act, Chapter 60, Article 13 NMSA 1978 and ensures to the Owner that such license shall remain in effect for the duration of the Work and warranty periods that the Contractor is authorized and properly licensed to do business in the State of New Mexico and in the locale where the Work is located;
4. execution of the agreement and performance thereof is within the Contractor's duly authorized powers; and
5. or assigns have visited the site of Work and has become familiar with the conditions under which the Work is to be performed, obtained all available information and have correlated observations and acquired information with the requirements of the Contract Documents including conditions:
 - a) bearing upon access to the site, accommodations required, transportation, disposal, handling and storage;
 - b) affecting availability of labor, materials, equipment, water, electricity, utilities and roads;
 - c) such as weather, river stages, flooding;
 - d) related to the apparent form and nature of the Work site, including the surface and sub-surface conditions; and,
 - e) that in general would be deemed by a prudent contractor to be material to the Work as to assess risk, contingencies and other circumstances;
6. has completed prior contracts with diligent and continuous effort and has been responsive to post-occupancy corrections.

PREQUALIFICATION FORMS

Not required.

DEBARRED OR SUSPENDED CONTRACTORS

A business (contractor, subcontractor, or supplier) that has either been debarred or suspended pursuant to the requirements of Sections 13-1-177 through 13-1-180 and 13-4-11 through 13-4-17, NMSA 1978 as amended, shall not be permitted to do business with the State and shall not be considered for award of contract during the period for which it is debarred or suspended.

Return completed form to address below:

State of New Mexico, PSFA
Contracts Administrator
1312 Basehart Road, SE
Suite 200
Albuquerque, NM 87106
Phone (505) 843-6272
Fax: (505) 988-5933

Form available on PSFA web site at:

http://www.nmpsfa.org/pdf/Admin/W9_Vendor_Authorization_Form.pdf



STATE OF NEW MEXICO
Taxation and Revenue Department



APPLICATION FOR PREFERENCE

GENERAL INSTRUCTIONS PLEASE READ BEFORE COMPLETING

Sections 13-1-21 and 13-1-22 NMSA 1978 authorize and set forth the criteria required for a business to qualify as a Resident Business or Resident Contractor. It is important to note, a resident preference is applicable to contracts, which typically call for, but are not limited to, the furnishing of tangible personal property, i.e. goods, supplies, materials, equipment, printed materials and certain services.

A "resident preference" is applicable only to procurements made pursuant to a formal bid process or formal Request For Proposals (RFP) process in accordance with Sections 13-1-21 and 13-4-2 NMSA 1978. Additionally, any person, firm, corporation, or other legal entity must have all required licenses at the time the application for preference is submitted to the Taxation and Revenue Department for consideration.

Please note: All certifications are subject to revocation in accordance with applicable rules. A certification merely establishes that the Taxation and Revenue Department has determined based upon the information provided in the application, as of the date of issuance, that the holder was entitled to treatment as a resident business and/or contractor by state agencies and local public bodies.

The attached application for preference is required by Section 13-1-22 NMSA 1978 as amended during the First Special Legislative Session of 2011. The application includes an **affidavit from a certified public accountant** setting forth certain eligibility criteria for businesses or contractors, as required by Section 13-1-22 NMSA 1978. The completed **application along with payment of Thirty Five (\$35) dollars** must be submitted to the Taxation and Revenue Department prior to issuance of a resident business preference or a resident contractor preference certificate.

In addition to the application, the Taxation and Revenue Department may require submission of additional information to ensure eligibility.

A certificate is valid for three (3) years from the date of its issuance; provided that if there is a change of ownership of more than fifty percent, a resident business or resident contractor shall reapply.

For questions concerning the application process please call (505) 827-0951. The application along with payment should be sent to:

New Mexico Taxation and Revenue Department
Santa Fe District Office
PO Box 5374
Santa Fe, NM 87502-5374



STATE OF NEW MEXICO
Taxation and Revenue Department



APPLICATION FOR RESIDENT CONTRACTOR CERTIFICATION

General Information

For questions please call (505) 827-0951

Name of Business:		Doing Business As (DBA):	
Mailing Address:			
City:	State:	Zip:	
New Mexico Combined Reporting system (CRS) Identification Number:		FEIN/SSN:	
VIN of vehicle registered in New Mexico:		Name of vehicle owner:	

Choose one of the following contractor statuses and check the appropriate boxes that apply to your business. If any statement in this application is not appropriate to or does not otherwise describe your business, your business may not qualify for this preference.

Existing Contractor

- The contractor is currently licensed as a contractor in New Mexico and
- The contractor has paid property taxes on real property in New Mexico in each of the last five years or the business has paid rent on real property in New Mexico in each of the last five years and
- The contractor has paid another New Mexico State tax in each of the last five years and
- The contractor has paid unemployment insurance on at least three full-time New Mexico resident employees in each of the last five years or the contractor has been licensed as a contractor in New Mexico for ten consecutive years.

New Contractor

- The contractor is currently licensed as a contractor in New Mexico and
- Property Taxes on real property in New Mexico have been paid in each of the last five years by the owner or the majority of owners or the owner or majority of owners have paid rent on real property in New Mexico in each of the last five years and
- The owner(s) of the business have paid another New Mexico State tax in each of the last five years and
- This business has not applied for a Resident Business Certificate or Resident Contractors Certificate in each of the last five years.

Relocated Business

- The contractor is currently licensed as a contractor in New Mexico and
- The business has leased real property in New Mexico for the last ten years or the business has purchased real property in New Mexico valued at over \$100,000 and
- Eighty percent or more of the business employees in the prior year were residents of New Mexico.

Previously Certified Business or Purchased, Reorganized, Name changed Business

- The contractor is currently licensed, or was eligible for certification as a contractor in New Mexico or
- The business has reorganized into one or more different legal entities or the business was purchased by another legal entity but operates in the same commercial enterprise or the business has merged with another legal entity but operates in substantially the same commercial enterprise.

AFFIDAVIT FROM CERTIFIED PUBLIC ACCOUNTANT				
STATE OF NEW MEXICO				
COUNTY OF _____				
I hereby swear, under oath that statements in the application for Resident Contractor Certification are true and complete to the best of my knowledge.				
Name:	Signature	CPA License #	State	Phone #
Subscribed and sworn to before me this _____ day of _____, 20____.				
Notary Public				
My Commission Expires: _____				

Send completed application Taxation and Revenue Department
along with \$35.00 to: PO Box 5374
Santa Fe, NM 87502-5374

Signature of Applicant Date



STATE OF NEW MEXICO
Taxation and Revenue Department



APPLICATION FOR RESIDENT VETERAN CONTRACTOR CERTIFICATION

SECTION I			General Information		
Name of Licensed Contractor		Doing Business As (DBA) if applicable			
Mailing Address - City, State, Zip Code					
Physical Address - City, State, Zip Code					
Name of Business Owner or Officer		Phone Number of Business Owner or Officer		E-mail of Business Owner or Officer	
Name of Business Contact		Phone Number of Business Contact		E-mail of Business Contact	
NM(CRS) Number:			Contractor License Number		FEIN/SSN
VIN of Vehicle Registered by Contractor with New Mexico			Name of Vehicle Owner		
SECTION II			Resident Veteran Contractor Status Information		
Please choose the relevant business status category below and place a checkmark next to all statements that apply to the applicant's business under the relevant category. If any statement under the relevant category is not appropriate to or does not otherwise describe the applicant's business, it may not qualify for certification.					
Existing Contractor					
<input type="checkbox"/> The contractor has been in existence for at least five years; and <input type="checkbox"/> The contractor is licensed as a contractor in New Mexico; and <input type="checkbox"/> The contractor has paid property taxes or rent on real property in New Mexico in <i>each</i> of the preceding five years; and <input type="checkbox"/> The contractor has paid at least one other tax administered by the State of New Mexico in <i>each</i> of the preceding five years; and <input type="checkbox"/> The contractor has paid unemployment insurance on at least three full-time New Mexico resident employees in <i>each</i> of the preceding five years or the contractor has been licensed as a contractor in New Mexico for ten consecutive years.					
New Contractor					
<input type="checkbox"/> The contractor did not exist as a business in any form and has been in existence for less than five years; and <input type="checkbox"/> The contractor is currently licensed as a contractor in New Mexico; and <input type="checkbox"/> The owner or majority of owners of the business have paid property taxes or rent on real property in New Mexico in <i>each</i> of the preceding five years; and <input type="checkbox"/> The owner or majority of owners of the business have paid at least one other tax administered by the State of New Mexico in <i>each</i> of the preceding five years; and <input type="checkbox"/> This contractor has not applied for a Resident Business Certificate or Resident Contractor Certificate during the preceding five years.					
Relocated Contractor					
<input type="checkbox"/> The contractor moved at least eighty (80%) percent of its total domestic personnel from another state to New Mexico in the past five years; and <input type="checkbox"/> The contractor is currently licensed as a contractor in New Mexico; and <input type="checkbox"/> Eighty (80%) percent or more of the total personnel of the business in the prior year were residents of New Mexico; and <input type="checkbox"/> The business has leased real property in New Mexico for ten years; or The business has purchased real property in New Mexico valued in excess of \$100,000.					

Previously Certified Contractor or a Contractor Previously Eligible for Certification			
<input type="checkbox"/> The contractor is licensed as a contractor in New Mexico; and <input type="checkbox"/> After January 1, 2012, but less than three years ago, the contractor obtained and was eligible for resident contractor certification. However, the contractor has since: (1) changed its name; (2) reorganized into one or more different legal entities; or (3) been purchased by or merged with another legal entity, but now operates in New Mexico as substantially the same commercial enterprise;			
OR			
After January 1, 2012, but less than three years ago, the contractor applied and was eligible for resident contractor certification. However, before the Department was able to issue certification, the business: (1) changed its name; (2) reorganized into one or more different legal entities; or (3) was purchased by or merged with another legal entity, but now operates in New Mexico as substantially the same commercial enterprise.			
SECTION III Annual Revenue and Documentation			
Please provide the business' previous year's annual revenues below and attach the required documents. If the required documents are attached, please place a checkmark next to the second statement below. An application submitted without the required information and documentation will be incomplete.			
<input type="checkbox"/> The previous year's annual revenues of the resident veteran business are \$ _____; and <input type="checkbox"/> Attached to this application is verification by the Federal Dept. of Veterans Affairs that the business is either a veteran-owned small business or a service-disabled veteran-owned small business;			
OR			
Attached to this application is proof that a veteran or veterans own a majority of the business and verification of either (1) veteran status as indicated by the U.S. Dept. of Defense DD Form 214 of release or discharge from active duty with an honorable discharge or (2) service disabled-veteran status by the Dept. of Veterans Affairs.			
AND			
<input type="checkbox"/> Any applicant provided a certificate of Resident Veterans Preference by the Taxation and Revenue Department as either a business or a contractor under the provisions of Sections 13-1-21 or 13-1-22 NMSA 1978, agrees that when awarded a contract involving a Veterans Preference during the last calendar year beginning on January 1 and ending on December 31, to report the award amount involved to the State Purchasing Division of the General Services Department. The report will be given under the penalty of perjury and indicate whether the awarded amount was as a purchase from a public body, or as a public works contract from a public body, as the case may be.			
SECTION IV Affidavit			
AFFIDAVIT FROM CERTIFIED PUBLIC ACCOUNTANT			
STATE OF _____	I hereby swear, <u>under oath</u> that it is my professional opinion that the applicant meets the required criteria set forth in NMSA 1978, Section 13-1-22 (2012) for Resident Veteran Business Certification and that ALL information provided and		
COUNTY OF _____	ALL checkmarked statements in the foregoing application are true and complete to the best of my knowledge.		
Name	CPA License #	State	Date
Signature			
NOTARY			
Subscribed and sworn to before me this _____ day of _____, 20_____.			
Notary Public _____ (NOTARY SEAL)		My Commission Expires _____	
I am authorized to sign this application on behalf of the applicant and attest to the truthfulness of the information provided herein.			
Signature of Applicant			Date
Please see last of instructions; APPLICATION AND FEE SUBMISSION for correct mailing address and fee.			

SECTION IV**Affidavit**

This portion of the form is a sworn statement by the CPA indicating that the statements selected in Section II are accurate descriptions of the contractor, and that all other information provided in the form is true and correct to the best of the CPA's knowledge. The affidavit also provides a sworn statement that it is the CPA's professional opinion that the contractor meets the required criteria for resident veteran contractor certification.

The contractor, officer of the contractor business or the contractor's authorized representative must also sign the application, affirming that the statements made and information provided in the application are true and correct.

APPROVALS AND PENALTIES

TRD will examine the application and affidavit. If necessary, TRD may seek additional information to ensure the contractor's eligibility. If TRD determines that the contractor is eligible, it will issue a certificate to the contractor. If TRD determines that the contractor is not eligible, it will issue notification within 30 days. If such notification is not provided by the Department, the application is deemed approved.

A certificate is valid for three years from the date of issuance; provided that if there is a change of ownership of more than 50%, the applicant must reapply. A contractor must also reapply if it has changed its name, reorganized into one or more different legal entities or was purchased by or merged with another legal entity, but now operates in New Mexico as substantially the same commercial enterprise. In such a case, the certification of the contractor in its previous form will apply three years from the date of the previous certification, but only to the extent the contractor was eligible for certification in its previous form.

If an application is denied, the business has 15 days from the date of the denial to file an objection with TRD, submitting evidence to support the objection. TRD must review the evidence and issue a response to the objection within 15 days of the filing of the objection.

If following a hearing and an opportunity to be heard, TRD finds that a contractor provided false information to TRD in order to obtain a certificate or that a contractor used a certificate to obtain a preference and the contractor did not perform the percentage of the contract specified in the bid or proposal, the business:

1. Is not eligible to receive a certificate or preference for a period of five years from the date on which TRD became aware of the submission of the false information or the failure to perform the contract as specified in the bid or proposal; and
2. Is subject to an administrative penalty of up to \$50,000 for each violation.

REVOCATIONS

TRD will contemplate revoking an issued certificate if information is revealed that the holder's situation has changed and/or the business does not qualify as a resident veteran contractor. If TRD contemplates revocation, it will issue a Notice of Contemplated Action to the contractor. The contractor will be provided with an opportunity to request an administrative hearing on the matter.

APPLICATION AND FEE SUBMISSION

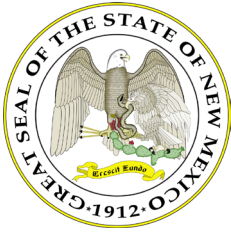
Submit the application along with \$35 application fee to:

New Mexico Taxation and Revenue Department
Santa Fe District Office
PO Box 5374
Santa Fe, NM 87502-5374

For questions concerning the application process please call (505) 827-0951.

DIV 00

2. CONTRACTING REQUIREMENTS



STATE OF NEW MEXICO

MICHELLE LUJAN GRISHAM GOVERNOR

[Name Of School District]

In Collaboration With

Public School Capital Outlay Council & Public School Facilities Authority

Santa Fe, New Mexico 87505

JOE GUILLEN PSCOC CHAIR

MARTICA CASIAS PSFA EXECUTIVE DIRECTOR

(505) 843-6272

NOTICE OF AWARD

TO:

[Click here to enter text]

DATE:

[Date]

[Select One] No.:

[#]

PROJECT No.:

[#]

PROJECT NAME: [Click here to enter text]

Ladies and Gentlemen:

This letter is to advise you that the [Name of School District], in conjunction with the Public School Capital Outlay Council – Public School Facilities Authority (PSFA), approved award of the construction contract to your firm for:

The Contract Price is as follows:

Table with 4 columns: Description, Amount: (General Contract), Amount: (Other Separate Contract), and rows for Base Bid Amount, Alternates, and Total Contract Amount.

Two (2) counterparts of each of the proposed Contract Documents (except Drawings) will be provided to you by the District for execution. Five sets of the Drawings will be delivered separately or otherwise made available to you by the Design Professional of Record.

You must comply with the following conditions within ten (10) calendar days of the date of this Notice of Award, that is, by

- 1. You must deliver to the Owner two fully executed counterparts of the Agreement, including all Contract Documents. Each of the Contract Documents must bear your signature on the appropriate page. Provide both your State of New Mexico and Federal Tax Identification Numbers on the signature page.
2. You must deliver with the executed Agreement; the Contractor's Performance Bond, Labor and Material Payment Bond; Agent's Affidavit; Subcontractors List including contract amount of each, evidence of required bonds, costs of each bond, and beneficiary of each bond, evidence of DWS registration, evidence of CID licensure; Assignment of Antitrust Claims (required for the

Contractor, all Subcontractors, and all Suppliers); Certificate of Insurance; State W-9; evidence of other bonds or documents as specified in the Bidding Documents; and, Schedule of Values; and,

3. OTHER CONDITIONS PRECEDENT (if none, write none)

Failure to comply with these conditions within the time specified will entitle the Owner to consider your bid abandoned, to annul this Notice of Award, and to declare your bid security forfeited.

Within thirty (30) days after you comply with these conditions, the Owner will return to you one fully signed counterpart of the Agreement with the Contract Documents attached.

You are reminded that prior to the first Payment Application, the Project Schedule will be required and prior to the second Payment Application, a schedule of submittals will be required.

By: _____
[Name, Title of District Representative]
[Name of School District]

By: _____
[Name, Title of PSFA Representative]
Public School Facilities Authority

Distribution to:

- District Purchasing Agent (original)
- Design Professional of Record (copy)
- PSFA Sr. Construction Manager (copy)
- PSFA Contracts Administrator (copy)
- Other _____



**STATE OF NEW MEXICO
PUBLIC SCHOOL FACILITIES AUTHORITY**

1312 Basehart SE # 200, Albuquerque, NM 87106 • (505) 843-6272 • <https://www.nmpsfa.org/>

**AGREEMENT BETWEEN THE
OWNER AND THE CONTRACTOR**

2022 EDITION, PART A OF AGREEMENT

Contract No **Enter Number**

Project No: **Enter Number**

Project: **Short Title**

School District: **Name of School District**

Location: **City, State, Zip Code**

THIS AGREEMENT is made and entered into by and between the **Name of School District** hereinafter the “District” and the Public School Facilities Authority hereinafter the “PSFA” and collectively, the District and the PSFA shall be referred to as the “Owner” unless otherwise specified and the **Name of the construction company**, hereinafter referred to as the “Contractor.” This Agreement shall become effective upon the date executed by the PSFA.

RECITALS

WHEREAS, The Public School Capital Outlay Council (PSCOC) allocated funding from the Public School Capital Outlay Fund for Project No. Project;

WHEREAS, the District has entered into Agreement with the PSCOC and its PSFA that identifies the funding source allocations between the District and the PSCOC and duties and responsibilities of, and between, the District and the PSFA;

WHEREAS, the District and PSFA will oversee the work and in collaboration make direct payment of Owner-approved expenses;

WHEREAS, the Contractor was selected as a result of a Competitive Sealed Request for Proposal, RFP# # in accordance with the New Mexico Procurement Code and established State purchasing procedures;

WHEREAS, the District through its School Board, is authorized to enter into a construction contract for the Project pursuant to Sections 13-1-100 and 22-5-4, NMSA 1978; and

WHEREAS, the Owner agrees to hire the Contractor, and the Contractor agrees to perform the Work as required hereinafter for the Project in accordance with the terms and conditions set forth in this Agreement.

NOW THEREFORE, for good and valuable consideration, the receipt and adequacy of which are hereby confessed and acknowledged, and in consideration of the mutual terms, conditions and covenants set forth in this Contract, the Owner and the Contractor agree as set forth below:

ARTICLE 1 THE CONTRACT DOCUMENTS

1.1. The Contract Documents consist of the following:

- 1.1.1. This Agreement Part A
- 1.1.2. General Conditions of the Contract Part B
- 1.1.3. Supplementary, and Other Conditions
- 1.1.4. Drawings
- 1.1.5. Specifications
- 1.1.6. Notice to Proceed
- 1.1.7. Performance, Labor and Material Payment Bond
- 1.1.8. Certificate of Insurance
- 1.1.9. Assignment of Antitrust Claims

- 1.1.10. Agent's Affidavit
 - 1.1.11. Schedule of Values
 - 1.1.12. All Addenda, Amendments, Modifications and Change Orders after Execution of this Agreement
- 1.2. The Drawings and Specification, with any changes or modification made prior to the execution of this Contract, shall be attached hereto or specifically identified in Article 6 below.
- 1.3. The Contractor shall prepare the Schedule of Values that is to be attached as a part of this Contract and shall submit it to the Owner for review and approval prior to it being attached to this Contract.
- 1.4. These documents form the Contract, and all are as fully a part of the Contract, whether attached to this Part A or specifically identified herein. The Contractor hereby acknowledges receipt of the documents, including the Drawings and Specifications identified herein.

ARTICLE 2 THE WORK

- 2.1. The Contractor shall perform all the Work required by the Contract Documents for the following:

ARTICLE 3 TIME OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

- 3.1. The Work to be performed under this Contract shall commence not later than ten (10) consecutive calendar days after the date of written Notice to Proceed. Substantial Completion shall be achieved not later than #calendar days after the date of written Notice to Proceed, except as hereafter extended by valid written Change Order by the Owner.
- 3.2. Time is of the essence with regard to the obligations of the Contract Documents.
- 3.3. The Owner may give consideration to factors outside of the control of the Contractor such as permit issues, weather conditions, and other situations, which prevent the Contractor from mobilizing, in determining the Notice to Proceed date. Should the Contractor neglect, refuse, or otherwise fail to complete the Work within the time specified for Substantial Completion, the Contractor agrees, in partial consideration for the award of this Contract, to pay to the Owner the amount of (written number) Dollars (\$ \$) per consecutive calendar day, not as a penalty, but as liquidated damages for such breach of this Contract.

**ARTICLE 4
CONTRACT SUM**

4.1. The Owner shall pay the Contractor in current funds for the performance of the Work, subject to additions and deductions by Change Order as provided in the Contract Documents, the Contract Sum of (written number) Dollars (\$ #).

4.2. The Contract sum is determined as follows:

[Project Number & Name]	STATE FUNDING	DISTRICT FUNDING	DISTRICT ABOVE ALLOWABLE FUNDING	TOTAL
	0.00%	0.00%	0.00%	
Base Bid Amount	\$0.00	\$0.00	\$0.00	\$0.00
Alternates (if any)	\$0.00	\$0.00	\$0.00	\$0.00
Bid Lot, Description	\$0.00	\$0.00	\$0.00	\$0.00
Bid Lot, Description	\$0.00	\$0.00	\$0.00	\$0.00
Bid Lot, Description	\$0.00	\$0.00	\$0.00	\$0.00
Bid Lot, Description	\$0.00	\$0.00	\$0.00	\$0.00
Bid Lot, Description	\$0.00	\$0.00	\$0.00	\$0.00
Bid Lot, Description	\$0.00	\$0.00	\$0.00	\$0.00
Bid Lot, Description	\$0.00	\$0.00	\$0.00	\$0.00
Bid Lot, Description	\$0.00	\$0.00	\$0.00	\$0.00
Bid Lot, Description	\$0.00	\$0.00	\$0.00	\$0.00
Bid Lot, Description	\$0.00	\$0.00	\$0.00	\$0.00
Contract Gross Sum	\$0.00	\$0.00	\$0.00	\$0.00
Gross Receipts Tax @	0.0000%	\$0.00	\$0.00	\$0.00
Contract Sum		\$0.00	\$0.00	\$0.00

4.3. Breakdown of required labor, material and performance and payment bond costs.

- 4.3.1. Total cost of Contractor bond* \$ 0.00
- 4.3.2. Total cost of all Subcontractor bonds \$ 0.00
- 4.3.3. Total cost of all project bonds \$ 0.00

4.4. Contractor labor, material and performance and payment bond costs shall be calculated on Award Amount exclusive of GRT.

**ARTICLE 5
KEY PERSONNEL**

5.1. The Contractor's Key Personnel are:

_____	_____
Name	Title
_____	_____
Name	Title
_____	_____
Name	Title

5.2. The Contractor may only assign one Superintendent to the Project.

5.3. In accordance with the General Conditions of the Contract Part B, paragraph 3.9.1, the Superintendent shall not be diverted nor replaced from this Agreement without prior written approval of the Owners.

5.3.1. The Owner and Co-Owner Representatives are:

5.3.1.1. Owner Representative:

_____	_____
Name	Title

5.3.1.2. Co-Owner Representative

_____	_____
Name	Title

**ARTICLE 6
GENERAL AND SPECIAL PROVISIONS**

6.1. **Applicable Law, Jurisdiction and Venue.** The terms and provisions of this Contract shall be interpreted and enforced pursuant to the laws of the State of New Mexico. In all disputes arising from or related to the Contract, jurisdiction shall be vested in the District Courts of the State of New Mexico. Venue shall be determined pursuant to Section 38-3-1 (G), NMSA 1978 or other applicable statutes of the State of New Mexico governing lawsuits wherein the State or any of its officers, officials or employees are named as parties. By entering into this Contract, Contractor expressly acknowledges and agrees and submits to the jurisdiction of the Courts of the State of New Mexico over any and all claims or lawsuits or disputes of any kind arising under or out of any term of this Contract. Any corporation, limited-liability company or other business entity entering into this Contract with Owner must be qualified to do business

in the State of New Mexico and hereby submits to the jurisdiction of the Courts of New Mexico.

- 6.2. **Definition of Terms.** Terms used in this Agreement, which are defined in the General Conditions of the Contract, shall have the meanings designated in those General Conditions. Terms used in this Agreement, which are defined in the New Mexico Procurement Code, shall have the meanings designated in said Code, if not defined in the General.

- 6.3. **Status of Contractor and Employees.** The Contractor and his agents and employees are independent contractors and are not employees of the Owner or the State of New Mexico. The Contractor and his agents and employees shall not accrue leave, retirement, insurance, bonding, use of State vehicles, or any other benefits afforded to employees of the Owner or the State of New Mexico as a result of this Agreement.

- 6.4. **Final Payment:** The Contractor, upon Final Payment of the amounts due under this Agreement, releases the Owner, his officers and employees, and the State of New Mexico from his liabilities and obligations arising from or under this Agreement, including but not limited to all damages, losses, costs, liability, and expenses, including but not limited to attorneys' fees and costs of litigation that the Contractor may incur.

- 6.5. **Limitation on Authority of Contractor.** The Contractor agrees not to purport to bind the Owner or the State of New Mexico to any obligation not assumed herein by the Owner or the State of New Mexico unless the Contractor has express written authority to do so, and then only within the strict limits of that authority.

- 6.6. **Notices.** All notices herein provided to be given, or which may be given, by either party to the other shall be deemed to have been fully given when made in writing and deposited in the United States mail postage prepaid, in the instance of Notice of Termination of Work, Certified Mail, Federal Express, or similar verifiable delivery method addressed as follows:

6.6.1. **Contractor:** (Name of Contractor)

Contact Name: _____
Title: _____
Address: _____
Email Address: _____
Telephone #: _____

6.6.2. **District:** (Name of School District)

Contact Name: _____
Title: _____
Address: _____
Email Address: _____

Telephone #: _____

6.6.3. Public School Facilities Authority:

Contact Name: _____

Title: _____

Address: _____

Email Address: _____

Telephone #: _____

6.7. Nothing herein contained shall preclude the giving of any such written notice by personal service. The address to which notices shall be mailed to either party may be changed by written notice given by such party to the other as herein above provided.

6.8. Gender, Singular/Plural. Words of any gender used in this Agreement shall be held and construed to include any other gender, and words in the singular number shall be held to include the plural, unless the context requires otherwise.

6.9. Captions and Section Headings. The captions and section headings contained in this Agreement are for convenience of reference only, and in no way limit, define, or enlarge the terms, scope, and conditions of this Agreement.

6.10. **Severability.** If any clause or provision of this Agreement is illegal, invalid, or unenforceable under present or future laws effective during the term of this Agreement, then and in that event it is the intention of the parties hereto that the remainder of this Agreement shall not be affected thereby.

6.11. **Waiver.** No provision of this Agreement shall be deemed to have been waived by either party unless such waiver be in writing signed by the party making the waiver and addressed to the other party; nor shall any custom or practice which may evolve between the parties in the administration of the terms hereof be construed to waive or lessen the right of either party to insist upon performance by the other party in strict accordance with the terms hereof. Further, the waiver by any party of a breach by the other party of any term, covenant, or condition hereof shall not operate as a waiver of any subsequent breach of the same or any other term, covenant, or condition thereof.

6.12. **Entire Agreement.** This Agreement represents the entire contract between the parties and, except as otherwise provided herein, may not be amended, changed, modified, or altered without the written consent of the parties hereto. This Agreement incorporates all of the conditions, agreements, and understandings between the parties concerning the subject matter of this Agreement, and all such conditions, understandings, and agreements have been merged into this written Agreement. No prior condition, agreement, or understanding, verbal or otherwise, of the parties or their agents shall be valid or

enforceable unless embodied in this written Agreement.

- 6.13. **Interchangeable Terms.** For purposes of all provisions within this Agreement and all attachments hereto, the terms "Agreement" and "Contract" shall have the same meaning and shall be interchangeable.
- 6.14. **Words and Phrases.** Words, phrases, and abbreviations which have well known technical or trade meanings used in the Contract Documents shall be used according to such recognized meanings. In the event of a conflict, the more stringent meaning shall govern.
- 6.15. **Distribution of Copies of Contract.** Fully executed copies of this Agreement shall be provided to the Owner and the Contractor and to such other parties associated with the Project as requested by the Owner or Contractor.
- 6.16. **Effective Date of Contract.** This Agreement shall not be effective nor binding until reviewed and signed by the PSFA.
- 6.17. **Contract Documents.** The Contract Documents, which constitute the entire Agreement between the Owner and the Contractor, are listed in Article 1. All drawings and specification specified above have been provided to the Contractor prior to or at the time of the execution of this Contract and the Contractor hereby acknowledges receipt of said Plans and Specifications. Contractor shall advise the Owner in writing if any Plans and Specifications listed above have not been provided and shall promptly notify Owner of any deficiency in said Plans and Specifications.
- 6.18. The following documents are contained in the Project Manual dated: **Select Date**
- 6.19. **Documents.**
- 6.19.1. Division 00 – Procurement and Contracting Requirements
- 00 4113 – Bid Form
 - 00 4166 – Bid Form
 - 00 4336 – Combined Subcontractor Listing and Assignment of Antitrust Claims
 - 00 5101 – Notice of Intent to Award
 - 00 5102 – Notice of Award
 - 00 5213 – Agreement between Owner and Contractor
 - 00 5501 – Notice to Proceed
 - 00 6113 – Performance Bond
 - 00 6114 – Labor and Material Payment Bond
 - 00 6129 – Agent's Affidavit – Construction Contract Bonds
 - 00 6131 – Bond Review Form – Construction Contract Bonds
 - 00 6216 – Certificate of Insurance

- 00 7200 – General Conditions of the Contract
- 00 7300 – Supplementary Conditions
- Addenda and Modifications

6.20. **Specifications.**

6.20.1. Division 01 General Requirements

- 01 1000 – Summary
- 01 2000 – Price and Payment Procedures
- 01 2100 – Allowances
- 01 2300 – Alternates
- 01 3100 – Project Management and Coordination
- 01 3300 – Submittal Procedures
- 01 3301 – Submittal Transmittal Form
- 01 4000 – Quality Requirements
- 01 5000 – Temporary Facilities and Controls
- 01 5001 – Project Sign
- 01 6300 – Product Substitution Procedures
- 01 6301 – Prior Approval Substitution Form
- 01 6302 – Contractor Substitution Request form
- 01 7000 – Execution Requirements
- 01 7500 – Starting and Adjusting
- 01 7700 – Closeout Procedures
- 01 7800 – Closeout Submittals
- 01 7801 – Equipment Inventory
- 01 7900 – Demonstration and Training

Division:

6.21. The following Drawings, dated: Select Date

- 6.21.1. Title Sheet
- 6.21.2. Civil C
- 6.21.3. Structural S
- 6.21.4. Architectural A
- 6.21.5. Mechanical M
- 6.21.6. Plumbing P
- 6.21.7. Electrical E
- 6.21.8. Other: List

6.22. Addenda

No.: _____ Description: _____ Date: _____

No.:	_____	Description:	_____	Date:	_____
No.:	_____	Description:	_____	Date:	_____
No.:	_____	Description:	_____	Date:	_____
No.:	_____	Description:	_____	Date:	_____
No.:	_____	Description:	_____	Date:	_____
No.:	_____	Description:	_____	Date:	_____
No.:	_____	Description:	_____	Date:	_____
No.:	_____	Description:	_____	Date:	_____

AGREED: This Agreement is entered into as of the date signed by the PSFA.

CONTRACTOR: (Name of Contractor)

By: _____

Printed Name: _____

Title: _____ Date: _____

Federal Identification Number: _____

NM CRS Identification Number: _____

DISTRICT: (Name of School District)

By: _____

Printed Name: _____

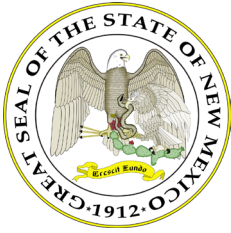
Title: _____ Date: _____

PUBLIC SCHOOL FACILITIES AUTHORITY:

By: _____

Printed Name: _____

Title: _____ Date: _____



STATE OF NEW MEXICO

MICHELLE LUJAN GRISHAM GOVERNOR

[Name Of School District]

In Collaboration With

Public School Capital Outlay Council & Public School Facilities Authority

Santa Fe, New Mexico 87505

JOE GUILLEN PSCOC CHAIR

MARTICA CASIAS PSFA EXECUTIVE DIRECTOR

(505) 843-6272

NOTICE TO PROCEED

TO:

[Click here to enter text]

DATE:

[Date]

[Select One] No.:

[#]

PROJECT No.:

[#]

CONTRACT No.:

[#]

PROJECT NAME: [Click here to enter text]

Ladies and Gentlemen:

Enclosed is your copy of the Contract, which has been approved. Please consider this letter as official NOTICE TO PROCEED on the above referenced project.

Your firm shall commence work within ten (10) calendar days of the above date and shall achieve Substantial Completion [#] calendar days thereafter, which shall be [Date], unless modified by Change Order.

It is essential that you make reference to the above stated project number on all documents sent to the Design Professional from your office. These documents shall include correspondence, modification change requests (MCR's), change orders, payment request statements, and all other project related material which you forward to the Design Professional for information and processing.

Before you may start any Work on the site, off the site, or otherwise incur expenses or liabilities, you must deliver all pre-Work documents required by the Construction Documents that include, but are not limited to, the Labor, Material and Performance Bonds and Certificate of Insurance and you must have received a Purchase Order for the Work (from both co-owners).

In addition, you must deliver (add any other requirements):

Invoicing for Work: Under no circumstances shall an invoice be received prior to Purchase Order date or prior to approval of Schedule of Values (to be submitted in CIMS).

In addition, you must (add any other requirements):

Table with 2 columns: School District contact info and PSFA contact info. Includes fields for Name, Title, Telephone, Email, and Address.

By: _____
[Name, Title of District Representative]
[Name of School District]

By: _____
[Name, Title of PSFA Representative]
Public School Facilities Authority

Distribution to:

- District Purchasing Agent (original)
- Design Professional of Record (copy)
- PSFA Sr. Construction Manager (copy)
- PSFA Contracts Administrator (copy)
- Other _____

SAMPLE

THE AMERICAN INSTITUTE OF ARCHITECTS



AIA Document A312

Performance Bond

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Principal Place of Business):

OWNER (Name and Address):

CONSTRUCTION CONTRACT

Date:

Amount:

Description (Name and Location):

BOND

Date (Not earlier than Construction Contract Date):

Amount:

Modifications to this Bond:

None

See Page 3

CONTRACTOR AS PRINCIPAL

Company:

(Corporate Seal)

SURETY

Company:

(Corporate Seal)

Signature: _____

Name and Title:

Signature: _____

Name and Title:

(Any additional signatures appear on page 3)

(FOR INFORMATION ONLY—Name, Address and Telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE (Architect, Engineer or other party):

SAMPLE

1 The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except to participate in conferences as provided in Subparagraph 3.1.

3 If there is no Owner Default, the Surety's obligation under this Bond shall arise after:

3.1 The Owner has notified the Contractor and the Surety at its address described in Paragraph 10 below that the Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Construction Contract. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default; and

3.2 The Owner has declared a Contractor Default and formally terminated the Contractor's right to complete the contract. Such Contractor Default shall not be declared earlier than twenty days after the Contractor and the Surety have received notice as provided in Subparagraph 3.1; and

3.3 The Owner has agreed to pay the Balance of the Contract Price to the Surety in accordance with the terms of the Construction Contract or to a contractor selected to perform the Construction Contract in accordance with the terms of the contract with the Owner.

4 When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

4.1 Arrange for the Contractor, with consent of the Owner, to perform and complete the Construction Contract; or

4.2 Undertake to perform and complete the Construction Contract itself, through its agents or through independent contractors; or

4.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and the contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by the Owner resulting from the Contractor's default; or

4.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

.1 After investigation, determine the amount for

which it may be liable to the Owner and, as soon as practicable after the amount is determined, tender payment therefor to the Owner; or

.2 Deny liability in whole or in part and notify the Owner citing reasons therefor.

5 If the Surety does not proceed as provided in Paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Subparagraph 4.4, and the Owner refuses the payment tendered or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

6 After the Owner has terminated the Contractor's right to complete the Construction Contract, and if the Surety elects to act under Subparagraph 4.1, 4.2, or 4.3 above, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. To the limit of the amount of this Bond, but subject to commitment by the Owner of the Balance of the Contract Price to mitigation of costs and damages on the Construction Contract, the Surety is obligated without duplication for:

6.1 The responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

6.2 Additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 4; and

6.3 Liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

7 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators or successors.

8 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

9 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation avail-

SAMPLE

able to sureties as a defense in the jurisdiction of the suit shall be applicable.

10 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page.

11 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12 DEFINITIONS

12.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Con-

tractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

12.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

12.3 Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Construction Contract.

12.4 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

MODIFICATIONS TO THIS BOND ARE AS FOLLOWS:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL
Company:

(Corporate Seal)

SURETY
Company:

(Corporate Seal)

Signature: _____
Name and Title:
Address:

Signature: _____
Name and Title:
Address:

SAMPLE

THE AMERICAN INSTITUTE OF ARCHITECTS



AIA Document A312

Payment Bond

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Principal Place of Business):

OWNER (Name and Address):

CONSTRUCTION CONTRACT

Date:

Amount:

Description (Name and Location):

BOND

Date (Not earlier than Construction Contract Date):

Amount:

Modifications to this Bond:

None

See Page 6

CONTRACTOR AS PRINCIPAL

Company:

(Corporate Seal)

SURETY

Company:

(Corporate Seal)

Signature: _____

Name and Title:

Signature: _____

Name and Title:

(Any additional signatures appear on page 6)

(FOR INFORMATION ONLY—Name, Address and Telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE (Architect, Engineer or other party):

SAMPLE

1 The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference.

2 With respect to the Owner, this obligation shall be null and void if the Contractor:

2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants, and

2.2 Defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity whose claim, demand, lien or suit is for the payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, provided the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 12) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety, and provided there is no Owner Default.

3 With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.

4 The Surety shall have no obligation to Claimants under this Bond until:

4.1 Claimants who are employed by or have a direct contract with the Contractor have given notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

4.2 Claimants who do not have a direct contract with the Contractor:

.1 Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and

.2 Have either received a rejection in whole or in part from the Contractor, or not received within 30 days of furnishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and

.3 Not having been paid within the above 30 days, have sent a written notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the Contractor.

5 If a notice required by Paragraph 4 is given by the Owner to the Contractor or to the Surety, that is sufficient compliance.

6 When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:

6.1 Send an answer to the Claimant, with a copy to the Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.

6.2 Pay or arrange for payment of any undisputed amounts.

7 The Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

8 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any Construction Performance Bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

9 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

11 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the work or part of the work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Subparagraph 4.1 or Clause 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, the Owner or the Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this

SAMPLE

Bond shall be construed as a statutory bond and not as a common law bond.

14 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15 DEFINITIONS

15.1 Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the

Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

15.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

MODIFICATIONS TO THIS BOND ARE AS FOLLOWS:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL
Company:

(Corporate Seal)

SURETY
Company:

(Corporate Seal)

Signature: _____
Name and Title:
Address:

Signature: _____
Name and Title:
Address:

APPROVED MODIFICATIONS PAGE

Modification No.1:

Paragraph 6 of this Payment Bond is deleted in its entirety and replaced with the following provision: Within 45 days (1) after the claimant has satisfied the conditions of Paragraph 4 and (2) after the Surety has received at its home office all supporting documentation it requested to substantiate the amount of the claim, the Surety shall pay or arrange for payment of any undisputed amounts. Failure of the Surety to satisfy the above requirements shall not be deemed a forfeiture or waiver of the Surety's or the Contractor's defenses under this Bond or their right to dispute such claim. However in such event the claimant may bring suit against the Surety as provided under this Bond.



SAMPLE

CERTIFICATE OF LIABILITY INSURANCE

DATE(MM/DD/YYYY)
MM/DD/YYYY

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

<p>PRODUCER</p> <p style="font-size: 1.2em; color: red; text-align: center;">Broker's Name & Address</p>	<p>CONTACT NAME:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-bottom: 1px solid black;">PHONE (A/C. No. Ext): (123) 123-4567</td> <td style="width: 50%; border-bottom: 1px solid black;">FAX (A/C. No.): (123) 123-4567</td> </tr> <tr> <td colspan="2" style="border-bottom: 1px solid black;">E-MAIL ADDRESS:</td> </tr> </table>	PHONE (A/C. No. Ext): (123) 123-4567	FAX (A/C. No.): (123) 123-4567	E-MAIL ADDRESS:									
PHONE (A/C. No. Ext): (123) 123-4567	FAX (A/C. No.): (123) 123-4567												
E-MAIL ADDRESS:													
<p>INSURED</p> <p style="font-size: 1.2em; color: red; text-align: center;">Insured's Name & Address</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 75%; border-bottom: 1px solid black;">INSURER A: [List Insurance Provider(s)]</td> <td style="width: 25%; border-bottom: 1px solid black;">NAIC #</td> </tr> <tr> <td style="border-bottom: 1px solid black;">INSURER B:</td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td style="border-bottom: 1px solid black;">INSURER C:</td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td style="border-bottom: 1px solid black;">INSURER D:</td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td style="border-bottom: 1px solid black;">INSURER E:</td> <td style="border-bottom: 1px solid black;"></td> </tr> <tr> <td style="border-bottom: 1px solid black;">INSURER F:</td> <td style="border-bottom: 1px solid black;"></td> </tr> </table>	INSURER A: [List Insurance Provider(s)]	NAIC #	INSURER B:		INSURER C:		INSURER D:		INSURER E:		INSURER F:	
INSURER A: [List Insurance Provider(s)]	NAIC #												
INSURER B:													
INSURER C:													
INSURER D:													
INSURER E:													
INSURER F:													

COVERAGES **CERTIFICATE NUMBER: 0123456789123** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS. **Limits shown are as requested**

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC <input type="checkbox"/> OTHER:	X	X	XXXXXXXXXXXX	MM/DD/YYYY	MM/DD/YYYY	EACH OCCURRENCE \$1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$xxx,xxx MED EXP (Any one person) \$xx,xxx PERSONAL & ADV INJURY \$1,000,000 GENERAL AGGREGATE \$2,000,000 PRODUCTS - COMPOPADG \$2,000,000
A	<input checked="" type="checkbox"/> AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> NON-OWNED AUTOS ONLY <input type="checkbox"/> HIRED AUTOS ONLY	X	X	XXXXXXXXXXXX	MM/DD/YYYY	MM/DD/YYYY	COMBINED SINGLE LIMIT (Ea accident) \$1,000,000 BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)
A	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> DED <input type="checkbox"/> RETENTION			XXXXXXXXXXXX	MM/DD/YYYY	MM/DD/YYYY	EACH OCCURRENCE \$5,000,000 AGGREGATE \$5,000,000
B	<input checked="" type="checkbox"/> WORKERS COMPENSATION AND EMPLOYERS' LIABILITY <input type="checkbox"/> ANY PROPRIETOR / PARTNER / EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NM) If yes, describe under DESCRIPTION OF OPERATIONS below Y/N <input type="checkbox"/> N/A			XXXXXXXXXXXX	MM/DD/YYYY	MM/DD/YYYY	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$x,xxx,xxx E.L. DISEASE-EA EMPLOYEE \$x,xxx,xxx E.L. DISEASE-POLICY LIMIT \$x,xxx,xxx
C	[List other insurance(s) here. DO NOT check ADDL INSR & SUBR WVD for Professional Liability]			XXXXXXXXXXXX	MM/DD/YYYY	MM/DD/YYYY	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

[PSFA Project number XXX-XXX & project location and address]

[Additionally Insured - NM Public School Facilities Authority, 1312 Basehart Road, SE, Suite 200, Albuquerque, NM 87106]

<p>CERTIFICATE HOLDER</p> <p style="color: red;">Certificate Holder Name Address City, State & Zip</p>	<p>CANCELLATION</p> <p style="font-size: 0.8em;">SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.</p> <p style="font-size: 0.8em;">AUTHORIZED REPRESENTATIVE</p> <p style="color: red; font-size: 1.2em; text-align: center;">Signature Required</p>
---	---

M O D I F I C A T I O N / C H A N G E R E Q U E S T

PROJECT NAME: XXXXXXXXXXXX PROJECT NUMBER: XXXXXXXXXXXX

M/CR LOG NUMBER _____ (Assigned by DP or PSFA) Current Date _____

REQUESTED BY DISTRICT REP (DR) CONTRACTOR DP PSFA INITIAL _____

WHO HAS REQUESTED THE WORK BE DONE _____
ie; user group name/individual/contractor/subcontractor/ etc.

DESCRIPTION OF CHANGE

First why, then how.

ATTACHMENT(S)

YES NO

OWNER REVIEW OF CONTENT AND/OR FEASIBILITY

INITIAL _____ DATE _____

DR

INITIAL _____ DATE _____

PSFA

DO NOT PROCEED

PROCEED WITH ESTIMATE OF COSTS ONLY (within 10 calendar days of receipt of this MCR)!

PROCEED WITH WORK, ESTIMATES OF COSTS TO FOLLOW (estimate within 10 days of receipt of this MCR)!

A/E – ESTIMATED COST OF REQUIRED DESIGN WORK: (estimate within 5 days; Include breakdown of costs)

\$ _____ Initial _____ Date _____

Project DP

PROCEED WITH DESIGN: (Forward proposed costs of work to OWNER for approval, include GRT)

APPROVED AMOUNT \$ _____ Initial _____ Date _____

DR

PSFA

CONTRACTOR'S PROPOSED COST: (Include backup, include GRT)

APPROVED AMOUNT \$ _____ Initial _____ Date _____

DR

PSFA

MUST BE COMPLETED TO FINALIZE:

INITIAL _____ DATE _____

DR

INITIAL _____ DATE _____

PSFA

PROCEED WITH MODIFICATION OF WORK AND TO CONTRACT SUM (INCLUDE IN CHANGE ORDER)

REJECTED BUT, REPLACED BY MCR # _____

REJECTED – STOP ALL ACTION ON THIS REQUEST _____



STATE OF NEW MEXICO

School District

In Collaboration With
PUBLIC SCHOOL CAPITAL OUTLAY COUNCIL (PSCOC)
 PUBLIC SCHOOL FACILITIES AUTHORITY (PSFA)

MICHELLE LUJAN GRISHAM
 GOVERNOR

JOE GUILLEN
 PSCOC CHAIR

MARTICA CASIAS
 PSFA EXECUTIVE DIRECTOR

00 6361 MODIFICATION CHANGE REQUEST (MCR) WORKSHEET

MCR No.: DATE:

PROJECT:

DESCRIPTION OF PROPOSED WORK:

[Redacted area for description of proposed work]

NOTE: Fill out a separate worksheet for each Subcontractor (SUB) on this MCR. The General Contractor (GC) shall use this same form to summarize the total of all SUB proposals while adding GC costs. Attach all worksheets and breakdowns to summary sheet for each MCR.

SUB'S COSTS (ATTACH SUB'S SHEET AND COST BREAKDOWNS):*		
1	Total of SUB's material (<i>attach itemized breakdown</i>):	\$ -
2	Total of SUB's labor cost including fringe benefits and labor burden (<i>attach itemized breakdown</i>):	\$ -
3	Other directly attributable costs allowed (<i>attach itemized breakdown</i>):	\$ -
4	Subtotal (sum of Items 1, 2, 3):	\$ -
5	SUB's Overhead and Profit (O&P) (<i>see Table 7.2.5.4</i>):	\$ -
6	SUB's Bond (<i>attach itemized breakdown</i>):	\$ -
7	SUB's Insurance (<i>attach itemized breakdown</i>):	\$ -
8	Permits paid by subcontractor (<i>attach itemized breakdown</i>):	\$ -
9	SUB's Total Costs (sum of Items 4, 5, 6, 7, 8):	\$ -

GC'S COSTS (ATTACH WORKSHEETS)*		
10	GC's material (<i>attach itemized breakdown</i>):	\$ -
11	GC's labor cost including fringe benefits and labor burden (<i>attach itemized breakdown</i>):	\$ -
12	GC's other directly attributable costs allowed (<i>attach itemized breakdown</i>):	\$ -
13	Directly attributable field supervision (<i>attach itemized breakdown</i>):	\$ -
14	Subtotal (sum of Items 10, 11, 12, 13):	\$ -
15	GC's O&P on SUB (0% of Item 4):	\$ -
16	GC's O&P on work by GC's own forces (0% of Item 14):	\$ -
17	Subtotal (sum of Items 14, 15, and 16):	\$ -
18	Permits paid by GC (<i>attach itemized breakdown</i>):	\$ -
19	Insurance (<i>attach itemized breakdown</i>):	\$ -
20	Bond (<i>attach itemized breakdown</i>):	\$ -

21	MCR Subtotal (sum of Items 9, 17, 18, 19, 20):	\$ -
22	Gross Receipts Tax (0.0000% of Item 21):	\$ -
23	GC's Total Cost (sum of Items 21 and 22):	\$ -

* Allowable costs and percentages shall not exceed those indicated in Article 7.2.5.

7.2.5.4. Profit Mark-up for Contractor Allowable Costs and Fees

Subtotal before applying Overhead and Profit	Under \$2,000	\$2,000 - \$10,000	\$10,001 - \$50,000	\$50,001 or more
Contractor: For Work Performed by Own Forces	18%	16%	14%	12%
Contractor: For Subcontracted Work	11%	9%	6%	5%
For Work Performed by 1 st Tier Subcontractor	18%	15%	12%	9%
For Work Performed by 2 nd Tier Subcontractor	10%	8%	5%	4%
Maximum Total Aggregate of Subcontractors regardless of the number of subcontractor tiers	29%	24%	18%	14%

7.2.5.5. Profit Mark-up for Subcontractor Allowable Costs and Fees

Subtotal before applying Overhead and Profit	Under \$2,000	\$2,000 - \$10,000	\$10,001 - \$50,000	\$50,001 or more
Subcontractor Pass-through mark-up, 1 st tier to 2 nd tier.	Not to exceed 4% of the subtotal amount, prior to applying subcontractor allowed mark-up.	Not to exceed 3% of the subtotal amount, prior to applying subcontractor allowed mark-up.	Not to exceed 2% of the subtotal amount prior to applying subcontractor allowed mark-up.	Not to exceed 1% of the subtotal amount prior to applying subcontractor allowed mark-up for the first \$100,000 above \$100,000 negotiated percentage.



School District

In Collaboration With

PUBLIC SCHOOL CAPITAL OUTLAY COUNCIL (PSCOC) PUBLIC SCHOOL FACILITIES AUTHORITY (PSFA)

00 6363 CHANGE ORDER (CO) WORKSHEET

CO No.: DATE:

PROJECT: CONTRACTOR: DESIGN PROF.: PSFA PO # DISTRICT PO # Distribution to: District Representative Design Professional of Record PSFA Regional Manager PSFA Contracts Administrator Contractor Other:

NOT VALID UNTIL SIGNED BY THE OWNER(S). Signature of the Contrator indicates agreement herewith, including any adjustment in the Contract Sum or Contract Time.

The Contract Time will be by The date of Substantial Completion as of the date of this Change Order therefore is Otherwise Parties agree by checking here: that at the time of this Change Order, there is no agreement on adjustment to the Contract Time related to MCR(s). (List MCR's by their number or write all in this Change Order). The Contractor, without prejudice and without waiving any rights to such claim for adjustment to Contract Time in relation to these MCR(s), agrees to postpone claim in accordance with Paragraph 7.3 of the General Conditions.

Table with 7 columns: MCR #, SHORT DESCRIPTION, STATE SHARE TO ALLOWABLE FUNDING, DISTRICT SHARE TO ALLOWABLE FUNDING, DISTRICT SHARE ABOVE ALLOWABLE FUNDING, DISTRICT TOTAL, TOTAL AMOUNT. Includes a TOTAL row at the bottom.

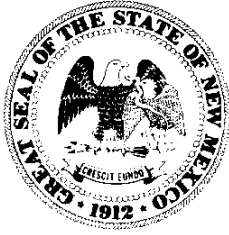
Summary table with 2 columns: Description, Amount. Rows include: The original Contract Sum was, Net change by previously authorized Change Orders, The Contract Sum prior to this Change Order was, The Contract Sum will be by this Change Order in the amount of, The new Contract Sum including this Change Order will be.

By: Name of District Representative School District By: Name of Signatory (Design Professional) 0 By: Name of Signatory (General Contractor) 0 Date:

Reviewed By: Name of Regional Project Manager PSFA REGIONAL MANAGER Approved By: Ryan Parks PSFA DEPUTY DIRECTOR

Date: _____

Date: _____



STATE OF NEW MEXICO

(NAME OF SCHOOL DISTRICT HERE)

In Collaboration With
PUBLIC SCHOOL CAPITAL OUTLAY
PUBLIC SCHOOL FACILITIES AUTHORITY
Santa Fe, New Mexico 87505

Michelle Lujan Grisham
GOVERNOR

Joe Guillen
CHAIR

Martica Casias
DIRECTOR
(505) 468-0274

CERTIFICATE OF SUBSTANTIAL COMPLETION

PROJECT NUMBER:

CONTRACT DATED:

PROJECT NAME:

WORK SUBSTANTIALLY COMPLETE: (Clearly state if in WHOLE or PART)

SUBSTANTIAL COMPLETION is defined, in accordance with Article 9 of the General Conditions, as the date certified by the Design Professional when all the Work, or portion of the Work, is complete except for minor items so that the Owner can completely occupy or fully utilize the Work for it's intended use.

The Design Professional also certifies that Contractor's Punch List of items to be completed or corrected prior to Final Completion, and Close-out List, have been reviewed by the Design Professional's best effort and found to be accurate. The Design Professional and the Contractor certify that attached are; 1) any agreed upon modifications or exceptions to Warranties stated in the Contract Documents, 2) Punch List, and 3) Close-out List and Schedule .

The DESIGN PROFESSIONAL therefore has determined that the Date of Substantial Completion for that Work defined above was _____, 20__ .

DESIGN PROFESSIONAL:

By:

Date:

The CONTRACTOR certifies that the above is true and in agreement and to be responsible for any Liquidated Damages due related to Substantial Completion date in accordance with the Contract Documents.

CONTRACTOR:

By:

Date:

The OWNER hereby accepts the above defined Work as being Substantially Complete on said date.

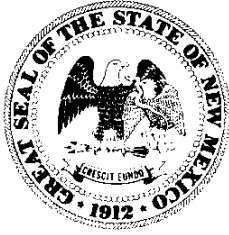
By: (NAME OF DISTRICT REPRESENTATIVE)
DISTRICT REPRESENTATIVE
(NAME OF DISTRICT) SCHOOL DISTRICT

By: (NAME OF PSFA REGIONAL FACILITIES MANAGER)
PSFA REGIONAL FACILITIES MANAGER

- Distribution to:
District Purchasing Agent
Design Professional of Record
Sr. Facilities Manager, PSFA
Contracts Administrator, PSFA
Other

Date: _____

Date: _____



STATE OF NEW MEXICO

(NAME OF SCHOOL DISTRICT HERE)

In Collaboration With
PUBLIC SCHOOL CAPITAL OUTLAY
PUBLIC SCHOOL FACILITIES AUTHORITY
Santa Fe, New Mexico 87505

Michelle Lujan Grisham
GOVERNOR

Joe Guillen
CHAIR

Martica Casias
DIRECTOR
(505) 468-0274

CERTIFICATE OF FINAL COMPLETION

PROJECT NUMBER:

CONTRACT DATED:

PROJECT NAME:

SUBSTANTIAL COMPLETION DATE:

FINAL COMPLETION is defined, in accordance with Article 9 of the General Conditions, as the date certified by the Design Professional when all the Work of the Project is fully complete, the Close-Out requirements of Paragraph 9.10 of the General Conditions have been completed, the Contract fully performed in accordance with the Contract Documents, and the Contractor entitled to final payment.

The DESIGN PROFESSIONAL has inspected the Work and has determined that the Date of Final Completion was _____, 20__.

DESIGN PROFESSIONAL:

By: Date:

ONE YEAR INSPECTION: Approximately thirty days prior to _____, the one-year anniversary of the Date of Substantial Completion, the Design Professional, the Owner, and the Contractor shall conduct an inspection of the Project to determine any correction of the Work which may be required at that time.

The CONTRACTOR certifies that the Work is fully completed and was completed on or before _____, and submits herewith:

- Application for Final Payment (AIA G702 or equal)
Affidavit of Payments (AIA G706 or equal)
Consent of Surety (AIA G707 or equal)
Release of Liens (AIA G706A or equal)

CONTRACTOR:

By: Date:

The OWNER hereby accepts the Work as fully complete and will make final payment.

By: (NAME OF DISTRICT REPRESENTATIVE) DISTRICT REPRESENTATIVE (NAME OF DISTRICT) SCHOOL DISTRICT
Date:
By: ((NAME OF PSFA REGIONAL MANAGER) PSFA REGIONAL MANAGER
Date: _____

- Distribution to:
[] District Purchasing Agent
[] Design Professional of Record
[] Sr. Facilities Manager, PSFA
[] Contracts Administrator, PSFA
[] Other

DIV 00

4. CONDITIONS of the CONTRACT



**STATE OF NEW MEXICO
PUBLIC SCHOOL FACILITIES AUTHORITY**

1312 Basehart Road SE #200, Albuquerque NM 87106 • (505) 843-6272 • www.nmpsfa.org

**GENERAL CONDITIONS OF THE CONTRACT
FOR CONSTRUCTION**

between the

OWNER

and the

CONTRACTOR

2022 VERSION, PART B OF THE CONTRACT

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ARTICLE 1
GENERAL PROVISIONS

1.1. BASIC DEFINITIONS

- 1.1.1. The Contract. Together, all of the Contract Documents identified in Part A form the complete Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship (1) between the Design Professional and Contractor, (2) between the Owner and a Subcontractor, Material Supplier and Equipment Supplier, (3) between the Owner and Design Professional or (4) between any persons or entities other than the Owner and Contractor.1.
- 1.1.2. The Work. The term "Work" means the construction and services required by or reasonably inferable from the Contract Documents, whether completed or partially completed, and includes all labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the results indicated by the Contract Documents in a safe, expeditious, orderly and workmanlike manner in keeping with current standards of the industry. The Work may constitute the whole or a part of the Project Should the Design Professional determine that any portion of the Work varies from the requirements of the Contract Documents, the Design Professional shall promptly notify the Owner and the Contractor of the nature of the noncompliance and the correction of the Work required. All claims, disputes, and other matters in questions between the Owner and the Contractor shall be referred to the Design Professional for formal decision
- 1.1.3. The Project. The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner or by separate contractors.
- 1.1.4. The Drawings. The Drawings are the graphic and pictorial portions of the Contract Documents showing, the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams and additional detail.
- 1.1.5. The Specifications. The Specifications are the written requirements of the Contract Documents for products, materials, workmanship, and performance of related services.
- 1.1.6. The Project Manual. The Project Manual is the volume of written Construction Documents typically containing Bidding Requirements, contract forms, Conditions of the Contract and Specifications.
- 1.1.7. Modifications: Modifications are changes to the Work, extension of time, payment of money, adjustment or interpretation of Contract terms. They include (1) Modification Change Requests, (2) Change Orders, (3) Construction Change Directives, (4) a written order for a minor change in the Work, hereinafter referred to as a Supplemental Instruction issued by the Design Professional, (5) a written interpretation or Additional Supplemental Instructions (ASI) issued by the Design Professional or (6) Field Change Order.
- 1.1.8. Punch List. A punch list is a comprehensive list of incomplete, defective or incorrect Work prepared by the Contractor, Design Professional or Owner to indicate Work required to be completed. Specific punch lists required by the Contract Documents include the Substantial

Completion Punch List created by the Contractor prior to application for Substantial Completion in accordance with Paragraph 9.8, and that includes the Close-Out Punch List as required by Paragraph 9.10, and any other punch list created by the Owner or Design Professional for the purposes of this Paragraph and otherwise successful completion of the Work.

1.2. CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

- 1.2.1. Intent: The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, such that what is required by one document shall be as binding as if required by all documents, and performance by the Contractor shall be required as necessary to produce the Work.
- 1.2.2. Reasonably Inferable, as used in this Contract, shall mean information or knowledge that is derivable or evident by prudent and diligent examination of the Contract Documents and other information reasonably available by the Contractor or Subcontractor knowledgeable in their field and includes items:
 - 1.2.2.1. Specified in the Contract Documents required to complete the Work, but not graphically indicated. Contractor shall provide the minimum product or work necessary to fulfill the Specifications or otherwise the requirements of any industry standards, such as, but not limited to, final function of Work such as strength, profile, or use as indicated by the Contract Documents; and,
 - 1.2.2.2. Shown or graphically indicated as required to complete the Work but not specified. Contractor shall provide the minimum product or work necessary to complete the depicted Work, such as, but not limited to, final function of Work such as strength, profile, or use as indicated by the Contract Documents.
- 1.2.3. Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings are for convenience of reference only and shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade. Such separation will not operate to make the Owner or Design Professional an arbiter of labor disputes or work agreements.
- 1.2.4. Words shall be first interpreted within the context they are used and by definition, if any, provided by the Contract Documents themselves. Unless otherwise stated in the Contract Documents words, which have well-known technical or construction industry meanings, are used in accordance with such recognized meanings. If the meaning of a word is not clear from the Contract Documents or have a well-known technical or construction industry meaning, the Webster's Collegiate Dictionary, current at time of contract, meaning shall apply.
- 1.2.5. Inconsistencies: In the event of conflicts in the Contract Documents, the most restrictive or otherwise most beneficial to the Owner shall apply to all similar conditions. Other rules for conflicts in the Contract Documents shall be that:
 - 1.2.5.1. Addenda shall govern over all other Contract Documents and subsequent Addenda shall govern over prior Addenda only to the extent modified;
 - 1.2.5.2. Between Drawings and Specifications, the Specifications shall govern;

1.2.5.3. Within the Drawings:

- 1.2.5.3.1. Schedule, when identified as such, shall govern over notes or other directions included within the Drawings.
- 1.2.5.3.2. Specific note shall govern over general notes.
- 1.2.5.3.3. Note evidently intended to be used as a general or typical note, shall be used as such throughout.
- 1.2.5.3.4. Dimensions provided shall take precedence over scaled measurements.
- 1.2.5.3.5. Large scale Drawings shall take precedence over smaller scale Drawings; and

1.2.5.4. General Conditions shall govern over all sections of the Contract Documents, except as modified by Supplementary General Conditions or Addenda/Amendments.

1.2.5.5. The Contractor shall comply with the provisions of Article 3.2 in providing notification of conflict within the Contract Documents, regardless of rules governing such conflicts and contained in this subparagraph.

1.3. **CAPITALIZATION:** Within the General Conditions, these terms are capitalized when they are used specifically in relation to the Agreement: Owner and Contractor who are parties to this Agreement, Design Professional who performs services under agreement with the Owner, Subcontractors who perform work under subcontract at any tier with the Contractor, the various Bidding and Contract Documents, Project, Work, titles of numbered Articles and Paragraphs within the Contract Documents, and names used to identify parts of the Project. When these terms are used generically and not specifically associated with the Project, they are not capitalized.

1.4. **INTERPRETATION:** In the interest of brevity, the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

1.5. **EXECUTION OF CONTRACT DOCUMENTS**

1.5.1. The Contract Documents shall be signed by the Owner and Contractor. If either the Owner or Contractor does not sign all the required documents of the Contract Documents, the Design Professional shall identify such unsigned documents.

1.5.2. Execution of the Contract by the Contractor is representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

1.6. **OWNERSHIP AND USE OF DRAWINGS AND SPECIFICATIONS**

- 1.6.1. Drawings, Specifications and copies thereof shall remain the Owner's property. Neither the Contractor nor any Subcontractor, material supplier or equipment supplier or any person or entity shall own or claim a copyright to any Drawings, Specifications or any other documents prepared or developed for definition of the Work. The Owner will retain all common law, statutory and other reserved rights, in addition to the copyrights. The Contractor, Subcontractors, material suppliers and equipment suppliers are authorized to use and reproduce applicable portions of the Drawings, Specifications and other documents for use in the execution of their Work under the Contract Documents. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Owner's copyrights or other reserved rights.

**ARTICLE 2
OWNER**

2.1. DEFINITIONS: GLOSSARY OF COMMONLY-USED TERMINOLOGY

- 2.1.1. "PSFA-CIMS" is the PSFA internet-based project communications system required for use on the Project, as defined in Subparagraph 4.3.1.1.
- 2.1.2. "Public School Capital Outlay Council (PSCOC)" is the body with responsibility to approve allocations for public school capital outlay assistance from the Public School Capital Outlay Fund in accordance with the Public School Capital Outlay Act, et. seq.
- 2.1.3. "Public School Facilities Authority (PSFA)" is the administrative agency of the PSCOC, charged with the indirect oversight of PSCOC funded projects pursuant to Section 22-24-9 NMSA 1978.

2.2. GENERAL

- 2.2.1. The District is the Owner and the PSFA is the Co-Owner. The Owner, referred to throughout the Contract Documents, shall be interpreted to be both the District and the PSFA.
- 2.2.2. The Owner shall designate at Part A, two (2) Owner representatives, one representing the District and one representing the PSFA. Agreement by both representatives shall be required in all instances where the Contract Document requires Owner Approval or authorization.
- 2.2.3. The Owner representatives shall have express authority to bind the Owners except as otherwise provided at Subparagraph 4.2.1.
- 2.2.4. After Final Completion in accordance with Paragraph 9.11, the Contract requirements shall recognize only the District as the Owner.

2.3. INFORMATION AND SERVICES REQUIRED OF THE OWNER

- 2.3.1. The Owner shall, at the written request of the Contractor, prior to commencement of the Work and thereafter, furnish to the Contractor reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. Furnishing of such evidence shall be a condition precedent to commencement or continuation of the Work. After such evidence has been furnished, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.
- 2.3.2. Except for permits and fees, including those required under Subparagraph 3.8.1, which are the responsibility of the Contractor under the Contract Documents, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities that shall include utility expansion charges but, not tapping fees.
- 2.3.3. The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner, but shall exercise proper precautions relating to the safe performance of the Work.

- 2.3.4. Unless stated otherwise in the Contract Documents, the Owner shall furnish specific testing, adjusting and compliance monitoring in accordance with Article 6 to include:
- 2.3.4.1. Geotechnical testing and analysis including soil testing and compaction, but excluding load testing for caissons and piers; and,
 - 2.3.4.2. Concrete testing including slump analysis and compression testing, however, at the Owner's request, the Contractor shall be responsible for forming test cylinders or similar; and
 - 2.3.4.3. Testing and balancing of heating and air-conditioning systems with the Contractor responsible for timely, diligent and coordinated corrections to Work required until performance is compliant with the Contract Documents. The Contractor shall be responsible for testing and costs as defined by Paragraph 13.5 and Subparagraph 12.2.1.1.
- 2.3.5. Information or services required of the Owner by the Contract Documents shall be furnished by the Owner with reasonable promptness. Any other information or services relevant to the Contractor's performance of the Work, under the Owner's control, shall be furnished by the Owner after receipt from the Contractor of a written request for such information or services.
- 2.3.6. Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, five (5) copies of Drawings and Project Manuals; however, the Contractor may have more copies free of charge if they are available without additional cost to the Owner.

2.4. OWNER'S RIGHT TO STOP THE WORK

- 2.4.1. If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents as required by Paragraph 12.2 or persistently fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated. However, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise its right for the benefit of the Contractor or any other person or entity.

2.5. OWNER'S RIGHT TO CARRY OUT THE WORK

- 2.5.1. If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven (7) day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may after such seven (7) day period, without prejudice to other remedies that the Owner may have, correct such deficiencies. In such case, an appropriate Modification in accordance with Article 7 shall be issued deducting from payments then or thereafter due the Contractor for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Design Professional's additional services made necessary by such default, neglect or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.
- 2.5.2. If in the event that the Contractor defaults or neglects to carry out the Work to final completion in keeping with the Substantial Completion Schedule provided in accordance with Subparagraph 9.8.2 and, fails within a seven (7) day period after receipt of written notice

from the Owner to correct such default with diligence and promptness, the Owner may after such seven (7) day period, without prejudice to other remedies, correct Punch List and Close-Out deficiencies to achieve project completion without further notice to the Contractor. In such case, an appropriate Modification in accordance with Article 7 shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Design Professional's additional services made necessary by such default, neglect or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

- 2.5.3. In carrying out the Owner's right to complete the Work in accordance with Paragraph 2.5, the Owner shall have the right to exercise the Owner's sole discretion as to the manner, methods and reasonableness of costs of completing the Work.

ARTICLE 3 CONTRACTOR

3.1. GENERAL

- 3.1.1. Definition: The Contractor is the person or entity identified as such in the Agreement, and is referred to throughout the Contract Documents as if singular in number. The term "Contractor" means the Contractor or the Contractor's authorized representative.
- 3.1.1.1. The Contractor shall perform the Work in accordance with the Contract Documents. The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents, either by activities or duties of the Design Professional in the Design Professional's administration of the Contract, or by tests, inspections or approvals required or performed by persons other than Contractor.
- 3.1.2. License: The Contractor shall, prior to bid, be properly licensed according to the requirements of the Construction Industries Licensing Act, Chapter 60, and Article 13 NMSA 1978, and shall ensure to the Owner that such license shall remain in effect for the duration of the Work and warranty periods.
- 3.1.3. Debarred or Suspended Contractors: A business (Contractor, Subcontractor, or supplier) that has either been debarred or suspended pursuant to the requirements of Sections 13-1-177 through 13-1-180, and 13-4-11 through 13-4-17, NMSA 1978, shall not be permitted to do business with the State and shall not be considered for award of contract during the period for which it is debarred or suspended.
- 3.1.4. Conflict of Interest, Governmental Conduct Act: The Contractor affirms that it currently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required under this Contract. The Contractor further agrees that in the performance of this Contract, no person having any such interest shall be employed by the Contractor. The Contractor certifies that the Contractor is in compliance with the Governmental Conduct Act pursuant to NMSA 1978, Sections 10-16-1 through 10-16-18 regarding contracting with a public officer or current or former state employee.
- 3.1.5. Bribes, Gratuities and Kickbacks: It is illegal in the State of New Mexico for any public employee to demand or receive or for any person to offer or give anything of value in connection with the award or performance of this Contract (Sections 30-24-1 and 30-24-2, NMSA 1978). It is also illegal for any person to solicit or receive or to offer or pay any kickback, bribe or rebate for any item or service for which public money may be used in whole or in part. (Sections 30-41-1 through 30-41-3, NMSA 1978). Section 13-1-191, NMSA 1978, requires that specific reference be made in this Contract to the criminal laws of the State of New Mexico, which prohibit bribes, kickbacks, and rebates.
- 3.1.6. Assignment of Antitrust Claims
- 3.1.6.1. The Contractor agrees that any and all claims that the Contractor may have or that may inure to the Contractor for overcharges resulting from antitrust violations as to goods, services, and materials purchased in connection with this Bid are hereby assigned to the State of New Mexico, but only to the extent that such overcharges are passed on to the State. The Contractor further agrees to require each of its Subcontractors and suppliers

to assign any and all such claims for overcharges to the State by executing an assignment on the form provided by the Owner for such purpose. The executed forms (see Section 00 4336 of the Bid Documents) shall be submitted prior to the commencement of the Work or the supplying of any materials by the supplier or Subcontractor. The submission of this executed form may be waived by the Owner upon a showing of a good-faith effort by the Contractor to obtain agreement in writing from its supplier or Subcontractor. Waiver by the Owner will not unreasonably be denied.

3.1.6.2. It is agreed that the Contractor retains all rights to any such antitrust claims to the extent of any overcharges not passed on to the State, including the right to any treble damages attributable thereto.

3.1.7. A Contractor that is not a resident of New Mexico, or is a foreign corporation not authorized to transact business in the State of New Mexico, shall designate an agent upon whom service of process may be made in accordance with Section 13-4-21 NMSA 1978.

3.1.7.1. If no agent for service of process designated for the Contractor, service may be made upon the New Mexico Secretary of State pursuant to Section 13-4-22 NMSA 1978 or in the manner specified in Section 13-4-23 NMSA 1978.

3.2. **CONTRACTOR REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS**

3.2.1. Before starting each portion of the Work, the Contractor shall carefully study and compare the various Drawings and other Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Subparagraph 2.2.3. The Contractor shall take field measurements of any existing conditions related to that portion of the Work and shall observe any conditions at the site affecting it. The Contractor shall take field measurements of any existing conditions related to that portion of the Work and shall observe any conditions at the site affecting it. The Contractor having visited the site of Work, and having become familiar with the conditions under which the Work is to be performed, shall have obtained all available information and have correlated observations and acquired information with the requirements of the Contract Documents including the following conditions:

3.2.1.1. Bearing upon access to the site, accommodations required, transportation, disposal, hauling and storage:

3.2.1.2. Affecting availability of labor, materials, equipment, water, electricity, utilities and such as weather, river stated, flooding;

3.2.1.3. Related to the apparent form and nature of the Work site, including the surface and sub-surface conditions; and,

3.2.1.4. That, in general, would be deemed by a prudent contractor to be material to the Work as to assess risk, contingencies and other circumstances.

3.2.1.5. Before ordering any materials or proceeding with Work, the Contractor and Subcontractors shall verify measurements at the Work site and shall be responsible for the correctness of such measurements.

3.2.2. Any design errors, omissions or defects noted by the Contractor during this review shall be reported promptly in writing to the Owner and to the Design Professional, and may be included in a Request for Interpretation in accordance with Subparagraph 3.2.2.2. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed Design Professional, unless otherwise specifically provided in the Contract Documents.

3.2.2.1. If the Contractor performs Work knowing it to be contrary to laws, statutes, ordinances, building codes, and rules and regulations without such notice to the Design Professional and Owner, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

3.2.2.2. If the Contractor believes that additional cost or time is involved, because of clarifications or instructions issued by the Design Professional in response to the Request for Interpretation pursuant to Subparagraphs 3.2.1., the Contractor shall make Claims as provided in Subparagraphs 4.4. and 4.5. If the Contractor fails to perform the obligations of Subparagraphs 3.2.1., the Contractor shall pay such costs and damages resulting from errors, inconsistencies or omissions in the Contract Documents or for differences between field measurements or conditions and the Contract Documents as would have been avoided if the Contractor had performed such obligations.

3.3. REQUEST FOR INTERPRETATION

3.3.1. Any question concerning a variation or deviation from the Contract Documents, including a minor change in the Work found necessary due to actual field conditions, shall be submitted to the Design Professional as a Request for Interpretation (RFI) for review and resolution before proceeding with the Work. When submitting an RFI, the Contractor must provide all information necessary for the Design Professional to promptly process, including the following information:

3.3.1.1. Reference(s) to Specification number, Drawing page and detail, and the like;

3.3.1.2. Description of issue;

3.3.1.3. Drawings, photos or sketches of conditions, if necessary; and,

3.3.1.4. Submittals or other information as necessary to facilitate resolution.

3.3.2. RFIs may be initiated only by the Contractor using the RFI Form included in the Specification Section of the Project Manual, Section 00 6313. The RFI shall be answered by the Design Professional within ten (10) days, or other reasonable time agreed upon between the parties. All Subcontractor RFIs must be initiated through the Contractor.

3.4. SUPERVISION AND CONSTRUCTION PROCEDURES

3.4.1. The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall

evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Design Professional and shall not proceed with that portion of the Work without further written instructions from the Design Professional with concurrence from the Owner.

- 3.4.2. The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for or on behalf of the Contractor or any of its Subcontractors.
- 3.4.3. The Contractor shall permit only qualified persons to perform the Work and shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.
- 3.4.4. The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

3.5. **LABOR AND MATERIALS**

- 3.5.1. Unless otherwise provided in the Contract Documents, the Contractor shall provide materials in sufficient quantities to facilitate the proper and expeditious execution of the Work. Contractor shall also pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.
- 3.5.2. The Contractor may request substitution of material only if:
 - 3.5.2.1. A detailed itemized comparison of the proposed substitution with the specified product has been submitted in accordance with the provisions identified in Section 01 6300-Product Requirements;
 - 3.5.2.2. Acceptance does not include substantial revision of Contract Documents, unless Contractor agrees to reimburse the Owner for those costs.
 - 3.5.2.3. A substitution request must be evaluated and recommended for approval by the Design Professional and approved by the Owners through a Modification Change Request.

3.6. **WARRANTY**

- 3.6.1. The Contractor warrants to the Owner and Design Professional that materials and equipment furnished under the Contract will be of good quality and new, unless otherwise required or permitted by the Contract Documents. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and be free from defects, except those inherent in the quality of Work required or permitted by the Contract Documents. Work, materials or equipment not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the

Contractor, improper or insufficient maintenance and improper operation, or normal wear and tear and normal usage. If required by the Design Professional, the Contractor shall furnish satisfactory evidence as to kind and quality of materials and equipment.

- 3.6.2. Warranty Period Inspection and Correction: Eleven (11) months after Substantial Completion, the Design Professional shall coordinate, with the Owner and the Contractor, a Warranty Inspection of all portions of the Work. Any Work found defective or needing adjustment or other correction in order to function and operate in accordance with the indication of the Contract Documents shall be promptly completed by the Contractor within twenty (20) days, or as otherwise agreed between the Owner and Contractor. The Owner may make such corrections or adjustments in accordance with Paragraph 2.4 but the Warranty of the Contractor shall no longer apply to the portions of the Work corrected by the Owner.
- 3.6.3. Warranty Period: The Contractor Warranty shall include all components and equipment required by the Contract Documents. All Work shall be warranted for the warranty;
 - 3.6.3.1. One (1) year from the date of first installation in accordance with Subparagraph 12.2.2.1;
 - 3.6.3.2. One (1) year from the date of replacement due to failure such that; each component of the Work must not fail for a one (1) year period regardless of the date of Substantial Completion; or,
 - 3.6.3.3. As stated in the Certificate of Substantial Completion that will become an addendum/amendment to the Contract.

3.7. TAXES

3.7.1. Gross Receipts Tax (GRT)

- 3.7.1.1. Section 7-10-4, NMSA 1978 requires that all Contractors performing services for the State be registered and be issued an identification number with the Taxation and Revenue Department (TRD) to pay the GRT. The identification number is required to properly complete the approval process of the Contract; therefore, the Contractor must register with TRD. Failure of the Contractor to register with TRD will result in all Contractor payments being withheld until registration with TRD is complete. TRD contact information:

TRD contact information:

Taxation and Revenue Department

P.O. Box 630

Santa Fe, New Mexico 87504-0630

TELEPHONE: (505) 827-0700

TRD Website: www.state.nm.us/tax/

or, TRD District Office in Albuquerque, Farmington, Las Cruces, Santa Fe or Roswell.

- 3.7.1.2. The Contractor shall pay New Mexico Gross Receipts and other applicable taxes specific for the Work provided by the Contractor which are legally enacted when bids are received or negotiations concluded.

3.7.1.3. Exception: Contractor is not be responsible for any Tribal taxes, such as the Navajo Nation Business Activity tax (NBAT) or tribal employment Rights Ordinance (TERO) taxes.

3.7.2. Nonresident Contractor's Requirements for Gross Receipts Tax Surety Bond

3.7.2.1. Any person (as defined in Section 7-1-3, NMSA 1978) engaged in the construction business who does not have a principal place of business in New Mexico and who enters into a prime construction contract to be performed in this State shall, at the time such contract is entered into, furnish the Director of the Revenue Division, Taxation and Revenue Department, or his delegate with a surety bond or other acceptable security in a sum equivalent to the gross receipts to be paid under the contract multiplied by the sum of the applicable rate of the gross receipts tax imposed plus the applicable rate or rates of tax imposed pursuant to local option gross receipts taxes to secure payment of the tax imposed on the gross receipts from the contract and shall obtain a certificate from the secretary or the secretary's delegate that the requirements of this subsection have been met. If the total sum to be paid under the Contract is changed by ten percent (10%) or more after the date the surety bond or other acceptable security is furnished to the Director or delegate, such person shall increase or decrease, as the case may be, the amount of the bond or security within fourteen (14) days after the change. Any increase or decrease in gross receipts tax enacted after the date the Bids are received shall result in a similar increase or decrease in the Contract Sum by appropriate Change Order. The new rate will be effective on the date that the revised rates are effective. In addition to the above requirements, the Contractor will be subject to all the requirements of Section 7-1-55, NMSA 1978.

3.8. PERMITS, FEES AND NOTICES

3.8.1. Building Permits: Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the Building Permit and other permits and governmental fees, licenses and inspections and Certificate of Occupancy necessary for proper execution and completion of the Work which are customarily secured after execution of the Contract and which are legally required when bids are received, negotiations concluded, and facilities occupied. Changes or modifications to the work shall include all requirements of this paragraph.

3.8.1.1. Fees: The Contractor will be responsible for the payment of connection charges, participation fees, plant investment fees, development fees, or other such fees to cover the capital expense charges of the utility companies. Included are the utility company's mains, trunks, or laterals necessary to reach the point where the tap is made. The Contractor will be responsible for the electrical, domestic water, fire service water, gas and other utilities at the point of connection irrespective of the side of the meter.

3.8.1.2. Easements and Utility Fees: The Contractor shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities that shall include utility expansion charges and tapping fees.

3.8.1.3. Storm Water Pollution Prevention Plan (SWPPP) Permit: The Contractor shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities that shall include utility expansion charges and tapping fees.

3.8.1.4. Notices: The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and lawful orders of public authorities applicable to performance of the Work. Certificates of Inspection, use and occupancy will be delivered to the Owner upon completion of the Work in sufficient time for occupation of the facility in accordance with the approved schedule for the Work. Contractor shall deliver a photocopy of the Building Permit will be delivered to the Design Professional and Owner as soon as it is obtained.

3.9. ALLOWANCES

3.9.1. The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection. Allowances shall be named as specific categories such as furniture, fixtures and equipment, specialized systems or temporary office space or moving, etc. The Allowances for separate categories may be combined as needed to make full use of the available funds, unless otherwise provided in the Contract Documents:

3.9.1.1. Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts.

3.9.1.2. Allowances shall cover the cost for the labor and/or subcontracts for installation or fabrication, etc.

3.9.1.3. Allowances shall cover the cost to the Contractor of “other required services” and any other “allowance covered” expenses.

3.9.1.4. Contractor’s costs for overhead and profit contemplated for stated allowance amounts shall be included in the Contract Sum. It shall not be included or allowed as a line item in the allowance proposals.

3.9.1.5. Whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by appropriate Modification in accordance with Article 7. The amount of the Modification shall reflect the difference between actual costs and the Allowance totals.

3.9.2. Materials and equipment under an allowance shall be selected by the Owner with sufficient time to avoid delay in the Work.

3.10. SUPERINTENDENT

3.10.1. The Contractor shall employ a competent Superintendent, who is acceptable to the Owner, and necessary assistants who shall be in attendance at the Project site during performance of the Work. The Superintendent shall not be diverted nor replaced from this Agreement without the prior written approval of the Owners. The Superintendent shall represent the Contractor, and communications given to the Superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.

- 3.10.2. Within ten (10) days after Notice of Award and commencement of the Work, the Contractor shall submit to the Design Professional, for the Owner's consideration for approval, a resume and Statement of Qualification of proposed Superintendent(s) and assistants. During construction, the Contractor shall replace individuals who are no longer acceptable to the Owner and shall submit a resume and Statement of Qualification for proposed replacements.

3.11. **CONTRACTOR'S SCHEDULES, LOGS, MEETINGS AND REPORTS**

- 3.11.1. Critical Path Construction Schedule: The Contractor, promptly after being awarded the Contract and before the first payment application, shall prepare and submit for the Owner's and Design Professional's information, a Critical Path Construction Schedule for the Work that indicates the intended start and completion of the various construction activities, which shall be implemented and adhered to by the Contractor, Subcontractors, material and equipment suppliers. At a minimum, the schedule shall be a GANTT type schedule and shall not exceed time limits allowed by the Contract Documents with no fewer work breakdown events than line items of the Schedule of Values. The schedule will incorporate and make provisions for significant known Owner activities, holidays and other special occasions. The Contractor will acknowledge that a reduction in activity may be necessary during the time prior to and during periods of special Owner events or occasions. The schedule shall be revised to indicate Work complete before each payment application and at appropriate intervals as required by the conditions of the Work and progress of the Work. The revised schedule shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work including, but not limited to time recovery strategies and Recovery Plan, if progress of the Work is behind schedule.

- 3.11.1.1. The Contractor shall perform the Work in general accordance with the most recent schedule submitted to the Owner and Design Professional.

- 3.11.2. The Contractor shall prepare before the second payment application and keep current, for the Design Professional's approval, a schedule of submittals that is coordinated with the Contractor's construction schedule and allows the Design Professional fourteen (14) days, or as otherwise agreed between the parties, to review submittals. A Submittal Log shall be maintained by the Contractor indicating for each scheduled submittal, the appropriate specification number, the date of submission, the date of approval and any re-submittals.

- 3.11.3. Weekly Meeting: Prior to the start of Work on the site and in no event later than the first payment application, the Contractor shall establish a weekly meeting time with the Owner and Design Professional and shall establish an agenda for the meeting. Contractor shall host the weekly job site meeting and shall maintain meeting minutes and distribute the meeting minutes to all parties in attendance and to those requested at the next meeting within three (3) days of the meeting. The meetings shall include but not be limited to:

- 3.11.3.1. Adoption of previous week's meeting notes that include list of attendees;
- 3.11.3.2. New business;
- 3.11.3.3. Old business;
- 3.11.3.4. Items requiring action with those assigned to action and expected action date;

- 3.11.3.5. Outstanding RFIs;
 - 3.11.3.6. Outstanding submittals; and,
 - 3.11.3.7. Other business including review of Progress Report or Payment Application if appropriate.
- 3.11.4. The meetings shall be chaired by the Contractor and shall include any Subcontractors doing work or anticipating work in the near future or for any other reason, owner, any entities that the owner would like to attend, including User Representative or users of completed project, Design Professional, any consultant(s) to the Design Professional who have or will have any work under way associated with the consultant's specialty. The Contractor shall alert the Owner and Design Professional as to which consultants are requested to attend the next meeting and include request in the meeting minutes. Attendees may attend virtually or telephonically by approval of the Owner.
- 3.11.4.1. Progress Report: Each month, at the regularly scheduled weekly meeting that is just prior to the Contractor submitting the Payment Application for that month; the Contractor shall present a Progress Report. The Contractor's Progress Report shall review the Project Schedule, the Schedule Recovery Plan if necessary, and the Three-Week-Look-Ahead Schedule.
 - 3.11.4.2. The Contractor prepared Three-Week-Look-Ahead Schedule shall include specific details of Work expected to be accomplished three weeks into the future, identify critical path Work to be completed, and identify potential obstacles including RFIs, submittals, material deliveries, utility hook-ups or any other event or task that might hinder the progress of the Work.
- 3.11.5. Emergency Contact List: The Contractor shall at the first weekly meeting, deliver to the Owner and the Design Professional an Emergency Contact List that will include emergency contacts for each of its principal staff and for every company that has worked or will do work on the Project. The list shall include the staff or company name, main office number, after hours office number(s); and, both a primary and secondary contact name, cell number and home number. The Contractor shall keep the Emergency Contact List current and distribute the most current version to Owner and Design Professional.
- 3.11.6. Daily Report: The Contractor shall prepare a Daily Report each day that Contractor, Subcontractors or any other entity are on the Project. The Daily Reports shall be maintained at the site, be well organized and include:
- 3.11.6.1. Report date and who prepared the report;
 - 3.11.6.2. Weather conditions - low temp, high temp, visibility, humidity, wind, wind direction, cloud conditions, precipitation amount, other notes;
 - 3.11.6.3. Companies present by name and their - number of workers, work location, total man hours that day for each company;
 - 3.11.6.4. Equipment - type, source, units of work done, location of work, hour meter reading;
 - 3.11.6.5. Material brought to site - description, units, quantity, quality, location, time;

- 3.11.6.6. Visitors to site - name, company, time;
- 3.11.6.7. Safety concerns - company, contact, noticed by, work activity, safety issue, requirement, outcome; and,
- 3.11.6.8. Quality assurance and control - company, description of issue, specification section, issued by.
- 3.11.6.9. Potential problems as the problem is identified.

3.12. DOCUMENTS AND SAMPLES AT THE SITE

- 3.12.1. The Contractor shall maintain at the site for the Owner, one record copy of the As-Built Drawings, Specifications, Addenda/Amendments, Modification / Change Requests, and other Modifications, in good order and marked currently to record field changes and selections made during construction, as well as, one record copy of approved Shop Drawings, Product Data, Samples and similar required submittals, and Meeting Notes and Daily Job Reports. These shall be available to the Design Professional and the Owner and shall be delivered to the Design Professional for submittal to the Owner upon completion of the Work. Information maintained in PSFA-CIMS in accordance with Subparagraph 4.3 with web access at the site shall be considered "at the site".

3.13. SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

- 3.13.1. Shop Drawings: Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor for a Subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.
- 3.13.2. Product Data: Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.
- 3.13.3. Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.
- 3.13.4. Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required by the Contract Documents the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review by the Design Professional is subject to the limitations of Subparagraph 4.3. Informational submittals upon which the Design Professional is not expected to take responsive action may be so identified in the Contract Documents. Submittals which are not required by the Contract Documents may be returned without action.
 - 3.13.4.1. Shop Drawings, Product Data, Samples and similar shall not be submitted on a "piece meal" basis and shall be submitted in packages, in accordance with the Construction Documents, so that like or interrelated submittals, that must be compared or correlated one to another, are submitted together. Submittals not submitted as a package so that they may be compared one to another for approval or

other action shall be returned to the Contractor without review, but with explanation by the Design Professional as why and what is required when re-submitted. For example, finish materials such as tile, carpet, wall covering and paint shall be submitted as a package.

- 3.13.4.2. If substitutions are allowed after the contract award, a submittal shall not be used for any substitution request (see Subparagraph 3.5.2).
- 3.13.5. The Contractor shall review for compliance with the Contract Documents, approve and submit to the Design Professional Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals which are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor may be returned by the Design Professional without action.
- 3.13.6. By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.
- 3.13.7. The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Design Professional and, if required, by the Jurisdiction Having Authority.
- 3.13.8. The Work shall be in accordance with approved submittals, except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Design Professional's approval of Shop Drawings, Product Data, Samples or similar submittals, unless the Contractor has substitution approved in accordance with Subparagraph 3.5.2, or unless the Contractor informed the Design Professional in writing of such deviation at the time of submittal and the Design Professional has given written approval to the specific deviation as a minor change as a Supplemental Instruction. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Design Professional's approval thereof.
- 3.13.9. The Contractor shall direct specific attention, in writing on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Design Professional on previous submittals. In the absence of such written notice, the Design Professional's approval of a resubmission shall not apply to such revisions.
- 3.13.10. The Contractor shall not be required to provide professional services which constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a Design Professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Design Professional will specify all performance and design criteria that such services must satisfy.

The Contractor shall cause such services or certifications to be provided by a properly licensed Design Professional, whose signature and seal shall appear on all drawings, calculations, Specifications, certifications, Shop Drawings and other submittals prepared by such professional.

3.14. USE OF SITE

- 3.14.1. The Owner assumes no responsibility or liability for the physical conditions or safety of the Work site or for any improvements located on the Work site. The Contractor shall be solely responsible for providing a safe place for the performance of the Work. The Owner shall not be required to make any adjustment to either the Contract Sum or Contract Time concerning any failure by the Contractor or Subcontractor to comply with the requirements of this Paragraph 3.14.
- 3.14.2. The Contractor will bear the cost and make the necessary arrangements and provisions for all construction water required during the entire construction period through the Owner or otherwise.
- 3.14.3. The Contractor will bear the cost and make the necessary arrangements and provisions for all construction electricity including distribution required during the entire construction period through the Owner or otherwise.
- 3.14.4. The Contractor will bear the cost and be responsible for temporary lighting, heating and cooling, data/phone lines, gas, waste lines, and other services as needed for the entire project.
 - 3.14.4.1. Exception: If available and at no premium cost to the Owner, the Owner will at no cost to the Contractor, allow the Contractor to utilize the Owner's existing lighting, heating and cooling providing Contractor will return systems to like or better condition that shall include, but not be limited to, new lamping, new filters, and the like.
- 3.14.5. Any temporary utility or other work done by the Contractor to accommodate Work requirements shall be removed at the conclusion of the Work and all finishes shall be repaired to match the existing, or in the areas of new construction, equal to or exceeding the requirements of the Contract Documents.
- 3.14.6. The Contractor shall request in writing any utility shut downs well in advance of necessity of any shut down and shall not proceed with any shut down without prior Owner approval. The Owner shall not be required to make any adjustment to either the Contract Sum or Contract Time concerning any failure by the Contractor or Subcontractor to comply with the requirements of this Subparagraph 3.14.6.
- 3.14.7. The Contractor shall provide and maintain a suitable temporary main field office at the Project site. The Office may be in, or a part of, the existing facility, provided that prior approval is obtained from the Owner. The Contractor will move or remove their office from the existing facility at the request of the Owner.
- 3.14.8. The Contractor may, if space is available, allow Subcontractors, material suppliers and equipment suppliers to provide and maintain field offices or storage trailers on the Project site for their own use. Locations and size of any office or storage trailers shall be as approved

by the Contractor and Owner prior to their placement on site. The Owner or Contractor may at any time require any temporary building or trailer to be moved or removed.

- 3.14.9. The Contractor shall conduct and confine operations at the site to areas as permitted by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.
- 3.14.10. All project related vehicles either company or personal vehicles may park on-site only in areas designated by the Owner and Design Professional. Parking will only be provided to the extent space on site will allow. All Contractors' parking must be well removed from normal facility traffic, and especially away from any pedestrian crossings, walkways, or drop off or loading areas.
- 3.14.11. All Contractor access to the Project site shall be by a designated construction entrance as directed by the contract documents, the Design Professional and the Owner, and shall be enforced by the Contractor.
- 3.14.12. Access to existing facility work areas, either occupied or not occupied, shall be controlled by the Owner. Every effort will be made by the Contractor to cooperate with the Owner's security requirements and policies. Access to a work area must be in accordance with the times and conditions scheduled and agreed to by all parties. Any access, other than at normally scheduled work times, must be coordinated with the Owner or Owner's appointee at least forty-eight (48) hours in advance. The Owner has the right to restrict or limit access as necessary to meet their needs, especially in regard to security and safety. Each Contractor, Subcontractor, or supplier's full cooperation is required. Background checks, escorts, or other means of control of access may be required depending on the Owner's requirements.
- 3.14.13. The Project working hours shall be those established by the Contract Documents and as agreed by the Owner. Any changes in project working hours such as adding shift work, extending workday hours or other similar changes must be submitted least forty-eight (48) hours in advance to the Owner for consideration.
- 3.14.14. Contractor shall make every effort to minimize disruptions such as noise or dust and shall provide safe access and egress to the Owner's operations, facility, portion of facility, or surrounding areas, including, but not limited to neighborhood or community; and shall, to inform and gain approval from the Owner of planned work, prepare and present to the Owner and Design Professional for Owner approval prior to beginning construction or using the site:
 - 3.14.14.1. Schedule for the work, to include phasing plans, proposed hours of operations, and activities to take place on weekends, school holidays and/or other special access requirements;
 - 3.14.14.2. Site logistics plan, showing proposed secure and fenced areas, locations and types of temporary barricades, material storage and staging areas, school property entrances used for material deliveries, and special material or equipment storage requirements. This plan will include a description and proposed location for the Contractor's temporary office, storage trailers, Subcontractor's trailers, sanitary facilities, employee parking areas, etc.;
 - 3.14.14.3. Detailed construction and phasing plan, to include locations of proposed temporary dust or noise partitions, alternate emergency egress routes, temporary facilities,

means and path of moving materials and equipment into the facility, and provisions for maintaining and supplying required utility services; and,

- 3.14.14.4. Routing plan to maintain safe ingress and egress to all areas at all times for students, staff and public either nearby or within the Project site that shall include re-routing pedestrian ways, rerouting traffic, erect routing signs, building of bridges, barricades, pedestrian tunnels, or whatever effort that will best accommodate Owner operations and provide required protection while work is in progress ensuring that no entrances or exits are blocked, closed off, or restricted in any way unless prior approval is granted by the Owner and the Fire Marshall or other jurisdiction having authority.
- 3.14.15. Contractor shall ensure that any and all of the Contractor's flammable liquids are stored outside of the building, and transported in approved containers. Paint, paint thinners, gasoline, oil, roofing materials or other flammable materials shall be stored fifty (50) feet, or more, outside of all buildings, marked as to contents and properly protected. The Contractor shall not pour flammable or toxic solvents, thinners, grout, floor leveling material, etc., into drains and sewers.
- 3.14.16. Whenever electric light for illumination purposes is found necessary for the safe progress of the work, the Contractor shall provide such lights as may be required to properly execute the work. This temporary lighting shall be constructed and arranged as not to interfere with the progress of other trades or Contractors working in the facility. This system of temporary lighting shall be erected and maintained strictly in accordance with the controlling codes and OSHA standards. The Contractor shall furnish all bulbs and temporary lighting devices required to carry on the work for all Trades under their Contract.
- 3.14.17. The Contractor shall, at the completion of Work in a given area, expeditiously remove all surplus material, equipment, and debris of every nature resulting from their operations, and put the areas in a neat, clean, and orderly condition. At Final Completion of the Project or an area of the Project, the Contractor shall final clean from top to bottom inside and out everything to the Owner's satisfaction to include plumbing fixtures, equipment, windows, floors, walls, light fixtures and the like in accordance with Paragraph 3.16.
- 3.14.18. The Contractor shall in accordance with Article 10, afford protection to all adjacent areas, buildings, roads, walks, and all other property adjacent to their work. Any portion of a building or other property damaged during construction operations shall be promptly, properly and thoroughly repaired and replaced without cost to the Owner.
- 3.14.19. Contractor shall maintain a safety plan that includes how the Contractor proposes to meet all OSHA and related requirements, details on safety equipment to be utilized, how the potential for fire and other potential hazards will be addressed, welding and cutting procedures and, how the Contractor will maintain safety related systems such as fire alarms, intercoms, and sprinklers while the Work is proceeding.
- 3.14.20. Jobsite Requirements Pertaining to Personnel: The following requirements apply to individuals on the jobsite:
 - 3.14.20.1. All personnel on site, directly or indirectly in the employ of Contractor, are restricted from any interaction with any Owner Staff, Students, or other members of the public

while on, or adjacent to Owner property except through jobsite meetings in accordance with Subparagraph 3.11.3 or as otherwise determined by the Owner;

- 3.14.20.2. All personnel on site, directly or indirectly in the employ of Contractor shall remain in their designated work areas. Communications with any non-project related persons on or near the site shall be through project Superintendent;
- 3.14.20.3. No firearms or any other types of weapons, of any sort will be allowed on site. If any person is found to be in possession of any Firearm, of any kind, they will be directed to leave immediately and will not be allowed to return. This includes any firearms found in Company or Private vehicles, tool boxes or brought on site in any other manner;
- 3.14.20.4. It is the policy of the Owner to prohibit smoking on any occupied school campus and on a new, un-occupied, site to limit smoking to designated areas;
- 3.14.20.5. It is the policy of the Owner to prohibit use, possession, sale, and distribution of alcohol, drugs, or other controlled substances on its premises and to prohibit the presence of an individual with such substances in their body from the workplace, the Contractor shall enforce this policy; and,
- 3.14.20.6. Contractor agrees that any employee who is found in violation of requirements of this Paragraph, or of the Contract Documents, or who refuses to permit inspection shall be barred from the Project site at the discretion of the Owner in accordance with Subparagraph 13.9.1.

3.15. CUTTING AND PATCHING

- 3.15.1. The Contractor shall be responsible for cutting, fitting or patching required to complete the Work, or to make its parts fit together properly.
 - 3.15.1.1. Cutting and patching shall be done by individuals skilled in working the materials involved so to prevent a reduction of visual qualities or resulting in substantial evidence of the cut-and-patch work.
 - 3.15.1.2. The Contractor shall not damage or endanger a portion of the Work, fully or partially completed, or existing construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor will not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

3.16. DAILY CLEAN-UP

- 3.16.1. The Contractor on a daily basis shall keep the premises and surrounding area free from accumulation of waste materials or rubbish resulting from the Work. The Contractor shall provide a dumpster, or other trash removal facility for use by their Subcontractors and all rubbish, debris and trash shall be deposited in Contractor provided containers located at an approved location on the site, There shall be no burning of trash or other open fires on the

site, If, in the opinion of the Owner, neatness is not maintained, the Owner may, following appropriate notice to the Contractor, have the area cleaned and the cost thereof shall be charged to the Contractor.

3.17. ACCESS TO WORK

3.17.1. The Contractor shall provide the Owner and Design Professional access to the Work at all times for any purpose that does not disrupt the completion of the Work by the Contractor.

3.18. ROYALTIES, PATENTS AND COPYRIGHTS

3.18.1. The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Design Professional harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Design Professional. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished in writing to the Design Professional.

3.19. INDEMNIFICATION

3.19.1. To the fullest extent permitted by law the Contractor shall indemnify and hold harmless the Owner, its agents and employees from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Paragraph 3.19.1. In claims against any person or entity indemnified under this Paragraph 3.19.1 by an employee of the Contractor, a Subcontractor, or anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under this Paragraph 3.19.1 shall not be limited by a limitation on amount or type of damages compensation or benefits payable by or for the Contractor, Subcontractor under any Liability Insurance, Workers' Compensation Acts, Disability Benefit Acts, or other employee benefit acts.

3.20. REPRESENTATIONS AND ASSURANCES

3.20.1. The Contractor, in addition to the requirements of the Contract Documents, represents to the Owner, that these representations will survive the execution and delivery of the Agreement and the completion of the Work that the Contractor:

3.20.1.1. Is financially solvent, able to pay debts, and has sufficient working capital to complete the Work;

- 3.20.1.2. Is able to furnish the plant, tools, materials, supplies, equipment, skilled labor and sufficient experience and competence required to complete the Work equal to or exceeding industry standards;
- 3.20.1.3. In accordance with Subparagraph 3.1.2., is authorized and properly licensed to do business in the State of New Mexico and in the locale where the Work is located;
- 3.20.1.4. Execution of the Agreement and performance thereof is within the Contractor's duly authorized powers; and,
- 3.20.1.5. Subcontractors, material suppliers and equipment suppliers have visited the site of Work and have become familiar with the conditions under which the Work is to be performed, obtained all available information and have correlated observations and acquired information with the requirements of the Contract Documents including conditions:
 - 3.20.1.5.1. Bearing upon access to the site, accommodations required, transportation, disposal, handling and storage;
 - 3.20.1.5.2. Affecting availability of labor, materials, equipment, water, electricity, utilities and roads such as weather, river stages, flooding;
 - 3.20.1.5.3. Related to the apparent form and nature of the Work site, including the surface and subsurface conditions; and,
 - 3.20.1.5.4. That in general would be deemed by a prudent contractor to be material to the Work as to assess risk, contingencies and other circumstances.

ARTICLE 4
ADMINISTRATION OF THE CONTRACT

4.1. DESIGN PROFESSIONAL

- 4.1.1. The term "Design Professional" means the Architect, Engineer or other professional person lawfully licensed to practice the profession within the State of New Mexico and can fulfill the requirements of the Contract Documents within that person's licensed authority. If lawfully allowed, the Design Professional shall also mean the Design Professional's authorized representative unless the Owner has a reasonable objection.
- 4.1.2. Duties, responsibilities and limitations of authority of the Design Professional, as set forth in the Contract Documents, shall not be restricted, modified or extended without written consent of the Owner and Design Professional. Consent shall not be unreasonably withheld.
- 4.1.3. If the employment of the Design Professional is terminated, the Owner shall employ a new Design Professional and whose status under the Contract Documents shall be that of the former Design Professional.
- 4.1.4. If there is no Design Professional, the Owner shall assume the responsibilities for Administration of the Contract Documents.

4.2. DESIGN PROFESSIONAL'S ADMINISTRATION OF THE CONTRACT

- 4.2.1. Duties and Responsibilities: The Design Professional will provide administration of the Contract as described in the Contract Documents, and will be an Owner's representative (1) during construction, (2) until final payment is due and (3) with the Owner's concurrence, from time to time during the one-year period for correction of Work described in Paragraph 12.2. The Design Professional will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified in writing in accordance with other provisions of the Contract.
- 4.2.2. Site Visits by Design Professional: The Design Professional, as a representative of the Owner, will visit the site at intervals appropriate to the stage of the Contractor's operations (1) to become familiar with and to keep the Owner informed about the progress and quality of the Work completed, (2) to use all reasonable efforts to guard the Owner against defects and deficiencies in the Work, and (3) to determine in general if the Work is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. The Design Professional will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work that is the responsibility of the Contractor to provide. The Design Professional will neither have control over or charge of, nor be responsible for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Subparagraph 3.4. However, if the Design Professional becomes aware of the failure of the Contractor, Subcontractors or any other person or entity performing any of the Work to use proper construction means, methods, techniques, sequences, procedures, safety precautions and programs or failure of any of the foregoing parties to carry out the Work in accordance with the Contract Document, the Design Professional shall promptly notify the Contractor and the Owner of the deficiency.

- 4.2.3. The Design Professional will have authority to reject Work that does not conform to the Contract Documents, and shall do so unless, after consultation with the Owner, Owner instructs otherwise. Whenever the Design Professional considers it necessary or advisable, the Design Professional will have authority, subject to the Owner's approval, to require inspection or testing of the Work in accordance with Paragraph 13.4., whether or not such Work is fabricated, installed or completed. However, neither this authority of the Design Professional nor a decision made in good faith, either to exercise or not to exercise such authority, shall give rise to a duty or responsibility of the Design Professional to the Contractor, Subcontractors, material and equipment suppliers, their agents or employee, or other persons or entities performing portions of the Work.

4.3. **COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION**

4.3.1. Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized or requested by the Owner, the Owner and Contractor shall endeavor to communicate with each other through the Design Professional about matters arising out of or relating to the Contract. Communications by and with the Design Professional's consultants shall be through the Design Professional. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with Owner's separate contractors shall be through the Owner.

4.3.1.1. In accordance with Subparagraph 2.1.1, with the Contract Documents, or otherwise required by Owner, the Contractor, Design Professional and Owner shall utilize PSFA-CIMS for project communications and shall:

- 4.3.1.1.1. Create and respond to all contractual communications through the PSFA-CIMS including, but not limited to, Daily Reports, RFIs, MCR's, Meeting Minutes, Submittal Log and Punch Lists;
- 4.3.1.1.2. Provide an adequate number of users in the PSFA-CIMS to properly manage the Project in accordance with the Contract Documents and the Project Schedule;
- 4.3.1.1.3. Provide to the PSFA the names, positions, and e-mail addresses of all individuals who will have access to the PSFA-CIMS;
- 4.3.1.1.4. Contract directly with a PSFA authorized training vendor if the PSFA training is not deemed sufficient to correctly and consistently use the PSFA-CIMS;

4.3.2. **Pay Application Review:** Based on the Design Professional's evaluations of the progress and quality of the Work, Contractor's Application for Payment and all other information available to the Design Professional, the Design Professional shall, within five (5) days of receipt of a properly completed Application for Payment, certify to the Owner the undisputed amount recommended for payment to the Contractor and shall provide specific reasoning for denial of disputed amounts.

4.3.3. **Rejection of Nonconforming Work:** The Design Professional will have authority to reject Work that does not conform to the Contract Documents, and shall do so unless, after consultation with the Owner, Owner instructs otherwise. Whenever the Design Professional considers it necessary or advisable, the Design Professional will have authority, subject to the

Owner's approval, to require inspection or testing of the Work in accordance with Paragraph 13.5, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Design Professional nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Design Professional to the Contractor, Subcontractors, material and equipment suppliers, their agents or employee, or other persons or entities performing portions of the Work.

- 4.3.4. Approval of Shop Drawings, Product Data and Samples: Unless rejected in accordance with Subparagraph 3.13.4.1., or is otherwise not in compliance with Section 3 of this Agreement, the Design Professional, shall within a reasonable time not to exceed fourteen (14) days, or other reasonable time agreed upon by the parties, review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, for the purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Review of such submittals is conducted solely in the interest of the Owner, and shall not relieve the Contractor of responsibility for determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Design Professional's review of the Contractor's submittals shall not relieve the Contractor of any obligations of these General Conditions. The Design Professional's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Design Professional, of any construction means, methods, techniques, sequences or procedures. The Design Professional's approval of a specific item shall not indicate approval of an assembly of which the item is a component.
- 4.3.4.1. The Contractor shall be responsible for the cost of inordinate re-reviews, exceeding two, by Design Professional due to non-compliance with Subparagraph 3.13.6.
- 4.3.4.2. Rejection of any submittal due to non-compliance with Subparagraph 3.13.6 shall not be the basis for claim for a project delay.
- 4.3.5. Modifications: The Design Professional may prepare for Owner consideration, Modification/Change Requests and Change Orders. The Design Professional shall review Contractor proposals for adjustment to the Contract Sum or Contract Time relative to a Modification / Change Request and shall either approve, reject or suggest compromise to such proposals.
- 4.3.5.1. The Design Professional may authorize Supplemental Instructions for minor changes in the Work as provided in Paragraph 7.5, provided there is no material change to the time, cost, specification or scope of the Work.
- 4.3.6. Closeout: The Design Professional will conduct inspections to make recommendations to the Owner of the date or dates of Substantial Completion and the date of Final Completion, will receive, approve and forward to the Owner, for the Owner's records, written warranties, Certificates of Insurance and related documents required by the Contract and assembled by the Contractor and will issue a final Certificate for Payment upon compliance with the requirements of the Contract Documents.

- 4.3.7. If the Owner and Design Professional agree, the Design Professional will provide one or more project representatives to assist in carrying out the Design Professional's responsibilities at the site.
- 4.3.8. Requests for Information/Design Interpretation: Subject to the claims procedures set forth in Paragraph 4.4., the Design Professional will, in the first instance, interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Design Professional's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If no agreement is made concerning the time within which interpretations required of the Design Professional shall be furnished in compliance with this Paragraph 4.3., then delay shall not be recognized on account of failure by the Design Professional to furnish such interpretations until ten (10) days after written request is made for them.
- 4.3.9. The Design Professional's decisions on matters relating to aesthetic effect will, with the Owner's consent, be final if consistent with the intent expressed in the Contract Documents.

4.4. **CLAIMS AND DISPUTES**

- 4.4.1. Definition. A Claim is a demand or assertion by one of the parties seeking as a matter of right, adjustment or interpretation of Contract terms, payment of money, and extension of time or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. Claims must be initiated by written notice. The responsibility to substantiate Claims shall rest with the party making the Claim.
- 4.4.2. Time Limits on Claims. Claims by either party must be initiated within twenty-one (21) days after occurrence of the event giving rise to such Claim or within five (5) days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Claims must be initiated by written notice to the Design Professional and the other party.
- 4.4.3. Continuing Contract Performance. Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Subparagraph 9.7.1. and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.
- 4.4.4. Claims for Concealed or Unknown Conditions. If conditions are encountered at the site which are (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the observing party shall be given to the other party promptly before conditions are disturbed and in no event later than seven (7) days after first observance of the conditions. The Design Professional will promptly investigate such conditions and if they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Design Professional determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Design Professional shall so notify the Owner and Contractor in writing, stating the reasons. Claims by either party in opposition to

such determination must be made within twenty-one (21) days after the Design Professional has given notice of the decision. If the conditions encountered are materially different, the Contract Sum and Contract Time shall be equitably adjusted, but if the Owner and Contractor cannot agree on an adjustment in the Contract Sum or Contract Time, the adjustment shall be referred to the Design Professional for initial determination, subject to further proceedings pursuant to Paragraph 4.4.

- 4.4.5. Claims for Additional Cost. If the Contractor wishes to make Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Paragraph 10.5.
- 4.4.6. If the Contractor believes additional cost is involved for reasons including but not limited to (1) a written interpretation from the Design Professional, (2) an order by the Owner to stop the Work where the Contractor was not at fault, (3) a written order for a minor change in the Work issued by the Design Professional, (4) unjustified failure of payment by the Owner, (5) termination of the Contract by the Owner, (6) Owner's suspension or (7) other reasonable grounds, Claim shall be filed in accordance with this Paragraph 4.4.

4.5. CLAIMS FOR ADDITIONAL TIME

- 4.5.1. If the Contractor wishes to make Claim for an increase in the Contract Time, it shall be submitted as a Modification / Change Request in accordance with Article 7. In the case of a continuing delay, only one Claim is necessary.
- 4.5.2. If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction. Substantiation must include supporting evidence from the U.S. Weather Bureau or similar for the previous ten (10) year averages for the locale of the Project, as well as, evidence supported by original project schedule and daily job logs that specific Work events falling on the critical path were delayed. A Claim for Additional Time will only be considered on the basis of evidence in the Schedule that the critical path of work flow was reduced or expanded directly attributable to the change(s) in the Work with evidence being differences in Contractor's initial and current schedules.
- 4.5.3. Injury or Damage to Person or Property. If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding five (5) days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.
 - 4.5.3.1. The Contractor shall promptly notify the Owner and Design Professional in writing of any claims received by the Contractor for personal injury or property damage related to the Work.
- 4.5.4. If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are changed in a proposed Modification/Change Request by more than fifteen percent (15%), the applicable unit prices shall be equitably adjusted in accordance with Article 7.

4.5.5. Claims for Consequential Damages. The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes damages incurred by the:

4.5.5.1. Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

4.5.5.2. Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, loss of profit except anticipated profit arising directly from the Work performed. This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Subparagraph 4.5.5.2. shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

4.6. **RESOLUTION OF CLAIMS AND DISPUTES**

4.6.1. Decision of Design Professional. Claims, including those alleging an error or omission by the Design Professional, but excluding those arising under Paragraphs 10.3 through 10.4, shall be referred initially to the Design Professional for decision. An initial decision by the Design Professional shall be required as a condition precedent to mediation, arbitration or litigation of all Claims between the Contractor and Owner arising prior to the date final payment is due, unless thirty (30) days have passed after the Claim has been referred to the Design Professional with no decision having been rendered by the Design Professional. The Design Professional will not decide disputes between the Contractor and persons or entities other than the Owner.

4.6.2. The Design Professional will review Claims and within ten (10) days of the receipt of the Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Design Professional is unable to resolve the Claim if the Design Professional concludes that, in the Design Professional's sole discretion, it would be inappropriate for the Design Professional to resolve the Claim.

4.6.3. In evaluating Claims, the Design Professional may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Design Professional in rendering a decision. The Design Professional may request the Owner to authorize retention of such persons at the Owner's expense if the claim does not arise from an error or omission of the Design Professional.

4.6.4. If the Design Professional requests a third party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten (10) days after receipt of such request, and shall either provide a response on the requested supporting data, advise the Design Professional when the response or supporting data will be furnished or advise the Design Professional that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Design Professional will either reject or approve the Claim in whole or in part.

- 4.6.5. The Design Professional will approve or reject Claims by written decision, which shall state the reasons therefore and which shall notify the parties of any change in the Contract Sum or Contract Time or both. The approval or rejection of a Claim by the Design Professional shall be final and binding on the parties but subject to mediation and arbitration.
- 4.6.6. A written decision of the Design Professional shall state that (1) the decision is final, but subject to mediation and arbitration and (2) a demand for arbitration of a Claim covered by such decision must be made within thirty (30) days after the date on which the party making the demand receives the final written decision, then failure to demand arbitration within said thirty (30) days period shall result in the Design Professional's decision becoming final and binding upon the Owner and Contractor. If the Design Professional renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence, but shall not supersede arbitration proceedings unless the decision is acceptable to all parties concerned.
- 4.6.7. Upon receipt of a Claim against the Contractor or at any time thereafter, the Design Professional or the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Design Professional or the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

4.7. **MEDIATION**

- 4.7.1. Any Claim arising out of or related to the Contract, except those waived as provided for in Subparagraph's 4.5.5, 6.2.3, 9.11.4, and 9.11.5 shall, after initial decision by the Design Professional or thirty (30) days after initial decision by the Design Professional or thirty (30) days after submission of the Claim to the Design Professional, be subject to mediation as a condition precedent to arbitration or the institution of legal or equitable proceedings by either party.
- 4.7.2. The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be in accordance with the procedures of the New Mexico Public Works Mediation Act (NMSA §13-4C-1 et seq.) except that before any party may select a mediator it must confer in good faith with the other party concerning the selection of a mutually acceptable mediator. The request may be made concurrently with the filing of a demand for arbitration but, in such event, mediation shall proceed in advance of arbitration or legal or equitable proceedings, which shall be stayed pending mediation for a period of sixty (60) days from the date of notice of mediation session, unless stayed for a longer period by agreement of the parties or court order.
- 4.7.3. The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Settlement Agreements reached in mediation and signed by all parties involved in the dispute shall be enforceable in any court having jurisdiction thereof.

4.8. **ARBITRATION**

- 4.8.1. Any Claim arising out of or related to the Contract, except those waived as provided for in Subparagraphs 4.5.5., 6.2.3, 9.11.4 and 9.11.5, shall after decision by the Design Professional or thirty (30) days after submission of the Claim to the Design Professional, be subject to

arbitration. Prior to arbitration, the parties shall endeavor to resolve disputes by mediation in accordance with the provisions under Paragraph 4.7.

- 4.8.2. Claims not resolved by mediation shall be decided by arbitration which, unless the parties mutually agree otherwise, shall be in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association currently in effect. The Demand for Arbitration shall be filed in writing with the other party to the Contract and with the American Arbitration Association, and a copy shall be filed with the Design Professional.
- 4.8.3. A Demand for Arbitration shall be made within the time limits specified in Subparagraphs 4.6.6 and 4.8.1 as applicable, and in other cases within a reasonable time after the Claim has arisen, and in no event shall it be made after the date when institution of legal or equitable proceedings based on such Claim would be barred by the applicable statute of limitations as determined pursuant to Paragraph 13.6.
- 4.8.4. Claims and Timely Assertion of Claims. The party filing a Notice of Demand for Arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.
- 4.8.5. Arbitration proceedings under this Agreement may be consolidated or joined with arbitration proceedings pending between other parties if the arbitration proceedings arise out of the same transaction or relate to the same subject matter. Consolidation will be by order of the arbitrator, in any of the pending cases, or if the arbitrator fails to make such an order, the parties may apply to any court of competent jurisdiction for such an order. Inclusive to this Subparagraph are the Owner, the Design Professional, the Contractor, all subcontractors, material suppliers, equipment suppliers, engineers, designers, lenders, sureties, and all other parties concerned with the construction of the Project are bound, each to each other, by this Subparagraph, provided such party has signed this Agreement or has signed an agreement which incorporates this Agreement by reference or signs any other agreement to be bound by this arbitration clause.
- 4.8.6. Judgment on Final Award. The award rendered by the arbitrator or arbitrators shall be final and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.
- 4.8.7. A settlement agreement signed by the Owner and the Contractor shall supersede and cancel any other dispute resolution proceedings regarding the same matter.
- 4.8.8. Work Continuing During Dispute Proceedings: Unless work is stopped, or payment withheld in accordance with the conditions of the Contract, or unless otherwise agreed in writing, the Contractor shall carry on the Work and maintain its progress during any aggrievement proceedings, and the Owner shall continue to make payments to the Contractor in accordance with the Contract Documents.

ARTICLE 5 SUBCONTRACTS

5.1. GENERAL

5.1.1. A Subcontractor is a person or entity who has a direct or indirect contract with the Contractor to perform a portion of the Work regardless of contractual tiers below the prime contract between the Owner and Contractor. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor. The New Mexico Subcontractor Fair Practices Act must be followed regarding any actions in the identification, replacement or addition of Subcontractors (NMSA 1978 Section 13-4-31 through 13-4-43).

5.2. AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

5.2.1. Prior to the Commencement of the Work, after the Notice of Intent to Award, the Contractor shall furnish the Design Professional and the Owner with any changes in the list of Subcontractors that the Contractor was required to provide pursuant to Section 13-4-34 NMSA 1978, at the time of bidding on the Project. The list must show the name and place of business of each Subcontractor and the category of Work to be performed by and Subcontractor that will perform Work of a greater value than Five Thousand Dollars (\$5,000.00) or Five Percent (5%) of the estimated value of the Project.

5.2.2. The Contractor shall not contract with a proposed person or entity to whom the Owner or Design Professional has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection. The Owner and the Design Professional will promptly reply to the Contractor in writing stating whether or not the Owner or the Design Professional, after due investigation, has reasonable objection to any such proposed entity or person. Failure of the Owner or Design Professional to reply promptly shall constitute notice of no reasonable objection. The Contractor shall not contract with a proposed person or entity to whom the Owner or Design Professional has made reasonable objection within fourteen (14) days of receipt of the list.

5.2.3. If the Owner or Design Professional has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Design Professional has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by the change, and an appropriate Modification in accordance with Article 7 shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

5.3. SUBCONTRACTUAL AND SUPPLIER RELATIONS

5.3.1. By appropriate agreement, the Contractor shall require each Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including performance of Work, responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the

Owner and Design Professional. Each subcontract and supplier agreement shall preserve and protect the rights of the Owner and Design Professional under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with suppliers. The Contractor shall make available to each proposed Subcontractor and supplier, prior to execution of the Agreement, copies of the Contract Documents to which the Subcontractor and suppliers where appropriate will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement which may be at variance with the Contract Documents. Nothing contained herein or elsewhere in the Contract Documents shall create any contractual relationship with or cause of action in favor of a third party against the Owner. Each entity intending to do work on the Project shall, prior to bid, be properly licensed according to the requirements of the Construction Industries Licensing Act, Chapter 60, Article 13, NMSA 1978 and shall ensure to the Contractor and to the Owner that such license shall remain in effect for the duration of the Work and warranty periods.

5.4. CONTINGENT ASSIGNMENT OF SUBCONTRACTS AND SUPPLIER AGREEMENTS

- 5.4.1. Each subcontract or supplier agreement for a portion of the Work may be assigned by the Contractor to the Owner provided that assignment is:
 - 5.4.1.1. Effective only after termination of the Contract by the Owner for cause pursuant to Paragraph 14.2 and only for those subcontract or supplier agreements which the Owner accepts by notifying the Subcontractor, supplier and the Contractor in writing: and
 - 5.4.1.2. Subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.
- 5.4.2. Upon such assignment, if the Work has been suspended for more than thirty (30) days, the Subcontractor's or supplier's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

ARTICLE 6
CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.1. OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

- 6.1.1. **Owner's Rights:** The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these, including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Paragraph 4.4.
- 6.1.2. **Meaning of "Contractor" in Separate Contracts:** When separate contracts are awarded for different portions of the Project or other Construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.
- 6.1.3. **Coordination by Owner:** The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor and Subcontractors shall participate with other separate contractors, the Owner's own forces and the Owner in reviewing and coordinating their construction schedules when directed to do so. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised. The Contractor and Subcontractors shall not delay or cause additional expense to another contractor by neglecting to perform correctly or to an agreed schedule. In the absence of a schedule mutually agreed upon by all parties, the Owner may create a binding schedule for all parties or take other appropriate action to avoid unnecessary delay and damages.
- 6.1.4. **Owner's Status:** Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights which apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11, and 12.
- 6.1.5. **Test, Adjust and Balance:** Unless otherwise provided in the Contract Documents, the Owner's separate contractor shall test, adjust, and balance (TAB) the HVAC system to design requirements in coordination with the Contractor's or Subcontractors own forces. The TAB work shall integrate with the Contractor's or Subcontractor's installation of the Work, equipment start-up and operational testing as required by the Contract Documents. Coordination and cooperation for this work and other similar Owner contractor work shall be in accordance with Paragraph 6.2.

6.2. MUTUAL RESPONSIBILITY

- 6.2.1. **Storage of Materials and Equipment:** The Contractor shall afford the Owner and separate contractors' reasonable opportunity for introduction and storage of their materials and

equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

6.2.2. Reporting Existing Defects: If part of the Contractor's Work depends on proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Design Professional and Owner apparent discrepancies or defects in such other construction that would render it unsuitable for proper execution and results. Failure of the Contractor to report shall constitute an acknowledgment that the Owner's or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

6.2.3. Liability for Reimbursement of Additional Costs: The Owner shall be reimbursed by the Contractor for costs incurred by the Owner which are payable to a separate contractor because of delays, improperly timed activities or defective construction of the Contractor. The Owner shall be responsible to the Contractor for costs incurred by the Contractor because of delays, improperly timed activities and damage to the Work or defective construction of the Owner or a separate Owner contractor. Should the Contractor sustain any personal injury or damage to property through any act or omission of any other Contractor having a contract with the Owner, the Contractor sustaining damage will have no claim or cause of action against the Owner for such damage and hereby waives any such claim.

6.2.4. Damage to Existing Work: The Contractor shall promptly remedy damage caused by the Contractor to completed or partially completed or existing construction or to property of the Owner or separate contractors as provided in Subparagraph 10.2.5.

6.2.5. The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Subparagraph 3.15.

6.3. **OWNER'S RIGHT TO CLEAN UP**

6.3.1. If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Design Professional will allocate the cost among those responsible.

**ARTICLE 7
CHANGES IN THE WORK**

7.1. GENERAL

7.1.1. Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Modification Change Request (MCR), Supplemental Instruction for a minor change in the Work, or by Construction Change Directive in accordance with this article and elsewhere in the Contract Documents. A Change Order and MCR shall be based upon the agreement by the Owner and Design Professional. A Construction Change Directive requires the agreement by the Owner and Design Professional, and may or may not be agreed to by the Contractor. An order for a Minor Change in the Work may be issued by the Design Professional alone. Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, the MCR, the Construction change Directive or Supplemental Instruction.

7.1.1.1. Changes in the Work shall be submitted by written documentation through the PSFA-CIMS.

7.2. MODIFICATION CHANGE REQUEST (MCR)

7.2.1. An MCR is a written document that may be initiated by the Contractor, Design Professional, or Owner that identifies a proposed change in the Work that may require an adjustment to the Contract Sum or Contract time, or both, and suggests how the change should take place. An MCR may also propose to alter the Work by substitutions or in any other manner not considered a minor change as defined by Paragraph 7.5., or otherwise materially affect the Work or intended function of the Project, including a change to aesthetics.

7.2.2. Following the submittal of the MCR by one of the parties to the PSFA-CIMS, the Owner may:

7.2.2.1. Authorize the Work to proceed with an adjustment to the Contract Sum in accordance with Subparagraph 7.2.5.;

7.2.2.2. Authorize the Work with adjustment to the Contract Time in accordance with Subparagraph 7.2.6.;

7.2.2.3. Authorize the Work with adjustments to both Contract Sum and time;

7.2.2.4. Authorize the Work to proceed with estimates of costs and/or time and materials, and/or time;

7.2.2.5. Reject the MCR and/or replace with another MCR.

7.2.3. If Work defined by an MCR requires an adjustment to Contract Sum or Contract Time, the Contractor shall, within ten (10) days of the date of Owner issuance of the MCR, or delivery of the MCR to the Contractor if that date is later, prepare and deliver to the Design Professional a proposal for such adjustment based on:

- 7.2.3.1. Unit prices or lump sum allowances stated in the Contract Documents;
- 7.2.3.2. Unit price or lump sum determined in accordance with Subparagraph 7.2.5.;
- 7.2.3.3. Provision in the MCR as determined by the Owner and in accordance with Subparagraph 7.2.5: or
- 7.2.4. A manner agreed upon by the parties and consistent with Subparagraph 7.2.5. and these General Conditions. Upon receipt of an MCR authorized by the Owner to proceed with the Work with “estimated costs,” or “estimated time,” or both, the Contractor shall consider the MCR a directive, and promptly proceed with the change in the Work involved, and provide a proposal for adjustment to Contract in accordance with Subparagraph 7.2.3. and 7.4.
- 7.2.5. Allowable Costs and Fees: If a proposal to adjust the Contract Sum exceeds two hundred dollars (\$200), and if not otherwise provided in the MCR or Contract Documents, the Contractor, shall provide an itemized accounting together with appropriate supporting data such as invoices, purchase orders, and certified payroll reports for the items listed below. Profit mark-ups to the allowable costs and fees may be applied to items 1 through 5 at the percentage rates established at tables at 7.2.5.4. and 7.2.5.5.
 - 1. Cost of labor of employees directly performing the Work, based on the established Wage Rate Determination, applicable payroll taxes, fringe benefits required by agreement, custom or statute, workers’ compensation insurance, unemployment insurance, health insurance and social security, but excluding retirement;
 - 2. Costs of materials, supplies and equipment, including cost of transportation whether incorporated or consumed;
 - 3. Rental costs of machinery and equipment, exclusive of hand tools whether rented from the Contractor or others;
 - 4. Permit fees, licenses and tests that Owner has accepted to pay in accordance with provisions of the Contract Documents;
 - 5. Costs of supervision and field office personnel directly attributable to the MCR.
- 7.2.5.1. Bonds, liability, and builders insurance shall not be subject to mark-up, but may be paid at full the increase from the base cost properly itemized and supported by sufficient information from the Surety or Insurance Carrier deemed sufficient by the Owner,
- 7.2.5.2. The NM GRT shall be at full value.
- 7.2.5.3. All trade discounts, rebates, refunds, and returns from sale of surplus materials and equipment shall be credited to the Owner.

7.2.5.4. Profit Mark-up for Contractor Allowable Costs and Fees

Subtotal before applying Overhead and Profit	Under \$2,000	\$2,000 - \$10,000	\$10,001 - \$50,000	\$50,001 or more
Contractor: For Work Performed by Own Forces	18%	16%	14%	12%
Contractor: For Subcontracted Work	11%	9%	6%	5%
For Work Performed by 1 st Tier Subcontractor	18%	15%	12%	9%
For Work Performed by 2 nd Tier Subcontractor	10%	8%	5%	4%
Maximum Total Aggregate of Subcontractors regardless of the number of subcontractor tiers	29%	24%	18%	14%

7.2.5.5. Profit Mark-up for Subcontractor Allowable Costs and Fees

Subtotal before applying Overhead and Profit	Under \$2,000	\$2,000 - \$10,000	\$10,001 - \$50,000	\$50,001 or more
Subcontractor Pass-through mark-up, 1 st tier to 2 nd tier.	Not to exceed 4% of the subtotal amount, prior to applying subcontractor allowed mark-up.	Not to exceed 3% of the subtotal amount, prior to applying subcontractor allowed mark-up.	Not to exceed 2% of the subtotal amount prior to applying subcontractor allowed mark-up.	Not to exceed 1% of the subtotal amount prior to applying subcontractor allowed mark-up for the first \$100,000 above \$100,000 negotiated percentage.

7.2.5.5.1. 1st tier Subcontractors can only mark-up self-performed work or pass-through work to a 2nd tier subcontractor,

7.2.5.5.2. No pass-through mark-up is allowed from 2nd tier to 3rd tier subcontractors.

7.2.5.5.3. Compounding mark-ups are not allowed.

7.2.6. Adjustment to Time: If Contractor encounters delays to the Work for any reason, other than a directive by the Owner, the Contractor shall provide prompt written notice to the Owner of the cause after first recognizing the delay.

7.2.6.1. The Contractor shall provide additional details concerning the delay in writing to the Design Professional with seven (7) days from the date of the delay notice that details the cause of the delay, the anticipated length of the delay in reasonable detail, the probable effect of such delay upon the progress and cost of the Work, and possible mitigation plans in accordance with Paragraph 4.5. and Article 8.

- 7.2.6.2. Contractor shall submit an MCR justifying the extension of time to include the number of days of extension requested, and additional costs in accordance with Paragraph 7.2. The MCR shall also include analysis of the critical path schedule and any other data demonstrating a delay in critical path of the Work or individual milestones or the overall Project completion.
- 7.2.6.3. For additional work, the MCR shall include the following:
1. A Daily Job Report reflecting all appropriate detail on related Work, such as work performed that day, number of workers, materials received; and
 2. A separate daily worker log must also be maintained that will be included in the proposed cost of the MCR. The daily worker log for each MCR must list each worker, the type of work performed, and the hours worked. It must be signed-off daily by an individual agreed upon in the MCR, who may be the Project Superintendent. In accordance with Paragraph 7.2., proposal of costs shall be delivered by the Contractor within ten (10) days of issuance of the MCR.
- 7.2.6.4. In the event the Contractor does not timely comply with the notice and documentation requirements set forth in Paragraphs 7.2.6. and 7.2.6.1., the Contractor's claim for delay is barred.
- 7.2.7. Audit: The Owner shall be entitled to audit the books and records of a Contractor or any Subcontractor for any time-and-material or negotiated cost, such as those associated with a change in the Work, to the extent that such books and records relate to the proposal or performance of such Work. Such books and records shall be maintained by the Contractor for a period of three years from the date of final payment under the prime Contract and by the Subcontractor for a period of three years from the date of final payment under the subcontract, unless a shorter period is otherwise authorized in writing.
- 7.2.8. The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Design Professional. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.
- 7.2.9. A proposed adjustment to Contract Sum and Contract Time submitted by Contractor for an MCR indicates agreement of the Contractor therewith for the proposed Modification. The Design Professional shall make recommendation to the Owner on the appropriateness of the proposed adjustment. The Owner may, after evaluation of the proposal and review of the Design Professional's recommendation, accept the Contractor's proposed adjustment to Contract Sum and finalize the MCR. If Owner approves an MCR, it shall be recorded for inclusion into a Change Order.
- 7.2.10. If the Contractor does not respond promptly with a proposal for adjustment to Contract Sum and Contract Time relative to an MCR or disagrees with the method for adjustment, or; if there are amounts or terms in dispute for such changes in the Work; the Design Professional on the basis of reasonable expenditures or savings of those performing the Work attributable to the change in the Work shall make a determination for purpose of settlement of dispute. That determination of adjustment to the Contract Sum and Contract Time shall be presented to the Owner and the Contractor for consideration. If the Owner or the Contractor do not

agree with the Design Professional's determination, the provisions of Subparagraph 7.2.11 shall apply. When the Owner and Contractor agree with the determination made by the Design Professional concerning the adjustments in the Contract Sum, such agreement shall be effective immediately upon Contractor's acceptance in writing and Owner's approval of MCR.

7.2.11. The Owner shall, within fifteen (15) days of the determination made by the Design Professional regarding adjustment to Contract Sum or Contract Time in accordance with Subparagraph 7.2.10, either:

7.2.11.1. Accept the Design Professional's determination and, approve the MCR with the adjustment recommended by the Design Professional and record the MCR as approved by the Owner to be included into a Change Order; or

7.2.11.2. Approve the MCR with an adjustment the Owner determines to be appropriate based on available information and record the MCR as approved by the Owner to be included into a Change Order. Adjustment to Contract Sum in accordance with this Subparagraph 7.2.11. shall be subject to the right of Contractor to disagree and assert a claim in accordance with Paragraph 4.6.

7.2.12. Partial agreement of an adjustment to Contract Sum or Contract Time relative to an MCR may be allowed by the Owner only if adjustment to Work requested by the MCR can be subdivided into independent parts. In the event of such subdivision, the MCR shall be broken into separate parts with alpha suffixes such as MCR 2A, MCR 2B and so on.

7.2.13. Periodically, approved MCRs shall be accumulated by the Owner or Design Professional into a Change Order in accordance with Paragraph 7.3.

7.3. CHANGE ORDERS

7.3.1. A Change Order is a written instrument prepared by the Design Professional and signed by the Owner, Contractor, and Design Professional, stating their agreement upon:

7.3.1.1. Change in the work as made by a finalized MCR that has been previously approved by the Owner, or authorized in accordance with Subparagraphs 7.2.8 or 7.2.9.;

7.3.1.2. Amount of the adjustment, if any in the Contract Sum resultant of approved MCR(s);

7.3.1.3. Extent of the adjustment, if any, in the Contract Time related to approved MCR(s); or,

7.3.1.4. If the Contractor disagrees with any adjustment in either the Contract Sum or Contract Time, the Contractor shall promptly advise the Design Professional of any disagreement, and proceed with the Work but may make a claim as permitted by this Agreement.

7.4. CONSTRUCTION CHANGE DIRECTIVE

7.4.1. A Construction Change Directive is a written order prepared by the Design Professional, and signed by the Owner and Design Professional, directing a change in the Work in the absence of the agreement of the Contractor to the terms of a propose Change Order.

- 7.4.2. If the Construction Change Directive provides for an adjustment to the Contract Sum, the proposed adjustment shall be based on one of the following methods:
1. A lump sum properly itemized and supported by sufficient substantiating data to permit evaluation by the Contractor;
 2. Unit prices state in the Contract Documents or agreed to by the Owner and Contractor;
 3. Cost to be permitted in a manner agreed upon by the parties; or
 4. As provided in the following Section.
- 7.4.3. If the Construction Change Directive provides for the Contractor to “Proceed with the Work with costs to follow” and/or “estimated costs”, the Contractor shall consider the MCR a directive and promptly proceed with the change in the Work involved, and provide a proposal for adjustment to Contract in accordance with Subparagraph 7.2.3.
- 7.4.4. If the Contractor does not respond promptly or disagrees with the proposed method for adjustment in the Contract Sum, the Design Professional shall determine the adjustment on the basis of the reasonable expenditures and savings of those performing the Work attributable to the change, including a reasonable amount for overhead and profit. The costs to be considered by the Design Professional shall be in accordance with the provisions outlined in Paragraph 7.2.
- 7.4.5. Pending final determination of the total cost of a Construction change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in the Applications for Payment. The Design Professional will make an interim determination for purposes of certification of payment for those costs, and certify for payment the amount the Design Professional determines in the Design Professional’s judgement, to be reasonably justified subject to the right of either party to disagree and assert a Claim as permitted by this Contract.

7.5. SUPPLEMENTAL INSTRUCTION – MINOR CHANGES IN THE WORK

- 7.5.1. The Design Professional will have authority to order Supplemental Instructions for minor changes in the work not involving adjustment in the Contract Sum or extension of the Contract Time, and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or contract Time, the Contractor shall notify the Design Professional and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Design Professional’s order for a minor change without prior notice to the Design Professional that such change will affect the Contract Sum or the Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

8.1. DEFINITIONS

- 8.1.1. “Contract Time” is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work, unless otherwise provided.
- 8.1.2. “Date of Commencement of the Work” is the date the Contractor begins the Work following receipt of the Notice to Proceed. The first Pay Application shall show the Date of Commencement of the Work.
- 8.1.3. “Date of Substantial Completion” is the date certified by the Design Professional in accordance with Paragraph 9.8.
- 8.1.4. “Day” shall mean calendar day unless otherwise specifically defined.

8.2. PROGRESS AND COMPLETION

- 8.2.1. Time is of the essence with regard to the obligations of the Contract Documents.
- 8.2.2. Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.
- 8.2.3. The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 in this document, to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance. The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time. The Owner shall not be liable to the Contractor for additional time or money if the Contractor submits a progress report or construction schedule expressing an intention to achieve completion of the Work prior to the Contract Time, and then is not able to achieve intended accelerated schedule regardless of the reason.

8.3. DELAYS AND EXTENSIONS OF TIME

- 8.3.1. If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Design Professional, or of a separate contractor employed by the Owner, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control, or by delay authorized by the Owner pending mediation and arbitration, or by other causes which the Design Professional and the Owner determine may justify delay, then the Contract Time shall be extended by Modification in accordance with Article 7 for such reasonable time as the Design Professional in concurrence with the Owner may determine.
- 8.3.2. Extensions of time not associated with modifications or changes to the Work shall not be allowed to increase the Contract amount for overhead or for any other reason and shall strictly apply toward liquidated damages.

- 8.3.3. Claims relating to time shall be made in accordance with applicable provisions under Paragraph 4.5.

8.4. **CONTRACT TIME AND LIQUIDATED DAMAGES**

- 8.4.1. Failure to Complete on Time: The Contractor agrees that the Work will be prosecuted regularly, diligently and without interruption at such rate of progress as will ensure completion within the Contract Time. It is expressly understood and agreed, by and between the Contractor and the Owner, that the Contract Time is a reasonable time for completion of the Work, taking into consideration the average climate range and usual industrial conditions prevailing in the locality of the Project. Average climate range considers the season of the year, the average precipitation and temperatures versus the work schedule. If the Contractor neglects, fails or refuses to complete the Work within the Contract Time, or any proper extension granted by the Owner, then the Contractor agrees to pay the Owner the amount specified in the Contract Documents, not as a penalty, but as liquidated damages.
- 8.4.2. Determination of Liquidated Damages: The parties agree that the amount of the likely damage to the Owner for such delay is difficult to ascertain at the time of execution of this Agreement, but that a reasonable estimate of such damages for delay is set forth in the contract Documents. Liquidated damages may be deducted from any monthly progress payments due to the Contractor or from other monies being withheld from the Contractor when a reasonable estimate of expected Substantial Completion can be determined by the Owner.
- 8.4.3. Final accounting of Liquidated Damages. Liquidated damages shall be determined at Substantial Completion and the Contractor and Surety are liable for any liquidated damages over and above unpaid balance held by the Owner.

**ARTICLE 9
PAYMENTS AND COMPLETION**

9.1. CONTRACT SUM

9.1.1. The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

9.2. SCHEDULE OF VALUES

9.2.1. The Schedule of Values for the Work is to be prepared by the Contractor, reviewed and approved by the Design Professional and the Owner, and included as a part of this Contract as set forth in Article 2 of Part A. The Schedule of Values, upon acceptance by the Design Professional with the Owner’s approval, shall be used as a basis for reviewing the Contractor’s Application for Payment. Any changes in the Schedule of Values shall be submitted to the Design Professional and supported by data to substantiate its accuracy.

9.2.1.1. Gross Receipts Tax shall be indicated for the total amount of all items included in the Schedule of Values. In the event of a GRT rate change, the Contractor shall submit a Modification Request requesting an adjusted amount on balance to complete the Contract.

9.2.1.2. To protect the Owner from the significant liability and arduous accounting efforts required by lingering documentation and close-out work, the Schedule of Values shall provide a separate line item titled “Documentation and Close-Out.” Said line item shall provide a value consistent with and appropriate to required documentation provisions throughout the Contract, including those required by Paragraph 4.3.1.1. and Paragraph 9.10. The value of the Documentation and Close-Out line item shall not be less than the following:

For a total Contract amount, excluding tax of:	Documentation Close-Out amount:
Less than \$20,000	\$0
\$20,001 - \$75,000	\$6,000
\$75,001 - \$100,000	\$8,000
\$100,001 - \$200,000	\$10,000
\$200,001 - \$350,000	\$15,000
\$350,001 - \$500,000	\$25,000
\$500,001 - \$1,000,000	\$50,000
\$1,000,001 - \$\$1,500,000	\$70,000
\$1,500,001 - \$2,000,000	\$90,000
\$2,000,001 - \$3,000,000	\$120,000
For each additional million, add \$30,000	

9.3. APPLICATIONS FOR PAYMENT

9.3.1. At least ten (10) days before the date for each payment, the Contractor shall submit to the Design Professional an itemized Application for Payment for Work completed in accordance

with the Schedule of Values for that month or period. Such application shall be supported by such data substantiating the Contractor's right to payment as the Owner or Design Professional may require such copies of requisitions from Subcontractors and material suppliers. No Applications for Payment will be processed until the initial Schedule of Values is received and approved by Design Professional with concurrence from the Owner and for subsequent payment applications; the Project Schedule has been updated in accordance with Subparagraph 3.11.1.

9.3.1.1. No Application for Payment may include more than:

9.3.1.1.1. Ninety-five percent (95%) of the scheduled value of any work requiring testing prior to testing and verification of testing by the Design Professional to meeting requirements of the Contract Documents;

9.3.1.1.2. Ninety percent (90%) of the scheduled value for systems that require, as a part of acceptance of the Work, testing or balancing including, but not limited to, mechanical heating, air conditioning and electrical distribution until testing, balancing or other verification required by the Contract Documents has been completed and verified as acceptable by the Design Professional.

9.3.1.2. Such applications may not include requests for payment for portions of the Work for which the Contractor does not intend to pay to a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

9.3.2. Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation into the Work. Any payments for such materials or equipment shall be conditioned upon the Contractor's demonstration that they are adequately protected from weather, damage, vandalism and theft and that such materials or equipment have been inventoried and stored in accordance with procedures established by or approved by the Owner. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing and with sufficient Contractor provided insurance against loss, and with Owner named as coinsured, to cover the value of stored materials and their transport to the Project.

9.3.3. The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall be free and clear of claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, material suppliers and equipment relating to the Work. The Contractor additionally warrants that all As-Built drawings accurately depict completed Work covered by an Application for Payment, inclusive of all trades and inclusive of, but not be limited to, actual locations and installed types, brand, model number and similar of all Work including ducts, pipes, conduit, equipment, walls and site utilities.

9.4. **CERTIFICATES FOR PAYMENT**

- 9.4.1. The Design Professional will review with the Owner the accuracy and appropriateness of the application and, within seven (7) days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Design Professional determines is properly due, or notify the Contractor and Owner in writing of the Design Professional's reasons for withholding certification in whole or in part as provided in Subparagraph 9.5.1.
- 9.4.2. The issuance of a Certificate for Payment will constitute a representation by the Design Professional to the Owner, based on the Design Professional's evaluation of the Work and the data comprising the Application for Payment: (1) the Work has progressed to the point indicated; (2) to the best of the Design Professional's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents; (3) As-Built drawings are current to actual Work completed; and (4) the Contractor is entitled to the payment in the amount certified. The foregoing representations of the Design Professional are subject to the subsequent evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Design Professional. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified.
- 9.4.3. The Owner will issue payment to the Contractor in the amount certified in the approved Certificate for Payment within twenty-one (21) days from the end of the progress payment period, which shall be the end of the month for which the Certificate of Payment is made. The seven (7) days allowed the Design Professional for review in Subparagraphs 4.3.2. and 9.4.1 are partially included in the twenty-one (21) day period.

9.5. **DECISIONS TO WITHHOLD CERTIFICATION**

- 9.5.1. The Design Professional may withhold a Certificate for Payment and may assess Liquidated Damages in accordance with Paragraph 8.4, in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Design Professional's opinion the representations to the Owner required by Subparagraph 9.4.2 cannot be made. If the Design Professional is unable to certify payment in the amount of the Application, the Design Professional will notify the Contractor and Owner as provided in Subparagraph 9.4.1. If the Contractor and Design Professional cannot agree on a revised amount, the Design Professional will promptly issue a Certificate for Payment for the amount for which the Design Professional is able to make such representations to the Owner. The Design Professional may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Design Professional's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Subparagraph 3.4.2, because of:
- 9.5.1.1. Defective Work not remedied;
- 9.5.1.2. Third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;

- 9.5.1.3. Failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
 - 9.5.1.4. Reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
 - 9.5.1.5. Damage to the Owner or another contractor;
 - 9.5.1.6. Reasonable evidence that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
 - 9.5.1.7. Persistent failure to carry out the Work in accordance with the Contract Documents.
- 9.5.2. When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

9.6. **PROGRESS PAYMENTS**

- 9.6.1. After the Design Professional has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents.
- 9.6.2. The Contractor shall pay each Subcontractor and supplier, the amounts due on any pending billing no later than seven (7) days after receipt of payment from the Owner, unless the Contractor and Subcontractor have agreed in writing to some other time of payment. Each Subcontractor shall require each of its Subcontractors to make payments to their additional Subcontractors in a similar manner. It is the Contractor's responsibility to comply with Section 57-28-5(C) NMSA 1978, requiring Contractors to make prompt payment to Subcontractors for work performed within seven (7) days after receipt of payment from the Owner or pay interest for failing to make prompt payment.
- 9.6.3. The Design Professional will on request, furnish to a Subcontractor information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Design Professional and Owner on account of portions of the Work done by such Subcontractor.
- 9.6.4. Neither the Owner nor Design Professional shall have an obligation to pay or to see to the payment of money to a Subcontractor except as may otherwise be required by law.
- 9.6.5. Payment to material suppliers shall be treated in a manner similar to that provided in Subparagraphs 9.6.2, 9.6.3 and 9.6.4.
- 9.6.6. A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.
- 9.6.7. The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to provide such evidence within seven (7) days, the Owner shall have the right to contact Subcontractors and supplier to ascertain whether they have been properly paid. Neither the Owner nor Design Professional shall have

an obligation to pay or see to the payment of money to Subcontractor except as may otherwise be required by law.

9.7. PROMPT PAYMENT REQUIRED

- 9.7.1. Payment of the amounts due the Contractor shall be made by the Owner pursuant to the Prompt Payment Act within twenty-one (21) days after the Owner receives an accurate Application for Payment and Certificate for Payment from the Design Professional. Payment by the Owner to the Contractor may be made by first-class mailing, electronic funds transfer or by hand delivery of the undisputed amount. If the Owner fails to pay the contractor within twenty-one days (21) days after receipt of the Application for Payment and Certificate for Payment, the Owner shall pay interest to the Contractor beginning on the twenty-second day after payment was due, computed at one and one-half percent (1.5%) of the undisputed amount per month or fraction of a month until the payment is issued. If an Owner receives an improperly completed Application for Payment certified by the Design Professional, the Owner shall notify the Design Professional and the Contractor within seven (7) days of receipt in what way the Pay Application is improperly completed, and the Owner has no further duty to pay on the improperly completed Pay Application until it is resubmitted and certified by the Design Professional as complete.
- 9.7.2. The Contractors and Subcontractors shall make prompt payment to their Subcontractors and suppliers for amounts owed for Work performed on the construction Project within seven (7) days after receipt of payment from the Owner, Contractor or Subcontractor. If the Contractor or Subcontractor fails to pay the Contractor's or Subcontractor's Subcontractors and suppliers by first-class mail or hand delivery within seven days of receipt of payment from the Owner, the Contractor or Subcontractor shall pay interest to the Subcontractors and suppliers beginning on the eighth day after payment was due, computed at one and one-half percent of the undisputed amount per month or fraction of a month until payment is issued. These payment provisions apply to all tiers of Contractors, Subcontractors and suppliers.

9.8. SUBSTANTIAL COMPLETION

- 9.8.1. Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is complete and in compliance with the Contract Documents except for minor items so that the Owner can completely occupy or fully utilize the Work for its intended use. Owner's Occupancy under conditional approval by public authorities having jurisdiction over the Work, or occupancy of a facility or otherwise utilizing the Work under duress, shall not be considered Substantial Completion.
- 9.8.2. When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall promptly prepare and submit to the Design Professional a comprehensive Contractor's Punch List inclusive and all incomplete and noncompliant Work to be completed or corrected prior to final payment, as well as, the requirements of Subparagraph 9.10.2.
- 9.8.3. The Contractor shall submit along with the punch list a separate and detailed Closeout Schedule indicating the date of Final Completion and all work to be completed before Final Completion including Close-Out requirements as provided in Paragraph 9.10. Failure to include any item on punch list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

- 9.8.4. Upon receipt of the Contractor's Punch List and Closeout Schedule, the Design Professional will within ten (10) days make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Design Professional's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof, as it is fully intended and designed to be used, the Contractor shall complete or correct such item upon inspection by the Design Professional to determine Substantial Completion. In the event the Work does appear Substantially Complete, the Design Professional will review the Contractor's Punch List for completeness required for issuance of Substantial Completion. The Contractor shall be responsible for cost of excessive Design Professional time and effort in completing list of incomplete and non-compliant Work not included in Contractor's Punch List or otherwise due to Contractor's neglect of responsibilities of Subparagraph 9.8.2.
- 9.8.5. When the Work or designated portion thereof is substantially complete, the Design Professional will prepare a Certificate of Substantial Completion, with the Owner's prior approval, which shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate in accordance with Subparagraph 9.8.2. All Authorities Having Jurisdiction (AHJ) inspection records will be submitted by the Contractor to the Design Professional and Owner.
- 9.8.6. The Certificate of Substantial Completion shall be submitted to the Contractor and Contractor shall submit for consent of surety, if required, for written acceptance and following acceptance, the Owner shall make payment to Substantial Completion. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

9.9. PARTIAL OCCUPANCY OR USE

- 9.9.1. The Owner may occupy or use any completed or partially completed portion of the Work at any stage provided such occupancy or use is consented to by the insurer as required under Subparagraph 11.4.1. and authorized by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have communicated in writing the responsibilities for payments, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties, if different from the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Design Professional as provided under Subparagraph 9.8.2.
- 9.9.2. The stage or the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, then by decision of the Design Professional.
- 9.9.3. Immediately prior to such partial occupancy or use, the Owner, Contractor and Design Professional shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

- 9.9.4. Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of work not complying with the requirements of the Contract Documents.

9.10. CLOSE-OUT REQUIREMENTS

- 9.10.1. Before final completion in accordance with Paragraph 9.11 can be achieved all Work must be complete and accepted including the requirements under Paragraph 9.10 including:

- 9.10.1.1. Substantial Completion in accordance with Paragraph 9.8;
- 9.10.1.2. Work associated with Punch List(s);
- 9.10.1.3. Testing, balance or performance operations complete and in agreement that associated work is in compliance with the Contract Documents and verified as such by the Design Professional;
- 9.10.1.4. One hard copy and one electronic copy in .pdf format of final approved test, balance or performance report(s) complete with directory of contents submitted to Owner;
- 9.10.1.5. As-Built drawings delivered in accordance with Subparagraph 3.12.1;
- 9.10.1.6. Written certification signed by Owner of delivery and stocking of extra material, equipment or components required by the Contract Documents at a location established by the Owner;
- 9.10.1.7. Delivery of all warranties required by the Contract Documents;
- 9.10.1.8. All keys, passes, codes, software or other methods or components of control or security which have been correctly and adequately accounted for and closed-out; and,
- 9.10.1.9. Up-loading of all Close-Out documents into the PSFA-CIMS including scans of Building Code Approvals and other code certifications, Substantial Completion documents, Punch Lists, Warranties, O&M Manuals to include a list of all major equipment with its manufacture name, model and serial numbers, Training of staff on all applicable building systems Sign-off, Extra Stock Sign-off, Final Completion documents, Completed Operations Liability insurance policy certificate, Utility transfer to Owner and Equipment inventory information as required in Division 01.

- 9.10.2. The Contractor shall prepare a separate Close-Out Punch List listing all requirements of Subparagraph 9.10.1 and the status of each, whether completed or not and the expected completed date of each component of the list. The Close-Out Punch List shall be a separate part and a subset of the Contractor's Punch List required for Substantial Completion in accordance with Subparagraph 9.8.2

- 9.10.3. At completion of the List, the Contractor shall state in writing to the Design Professional that the Close-Out Punch List has been completed and request a Close-Out Meeting with the Design Professional and the Owner. The Design Professional shall schedule such meeting

within ten (10) days of the request, or otherwise reply in writing to the Contractor why the request is pre-mature. At the Close-Out Meeting, all requirements to achieve close-out will be verified, and if Work is found to be complete, the Design Professional, with concurrence from the Owner, shall provide written approval of Contractor's completion of close-out requirements within five (5) days of the conclusion of the meeting.

- 9.10.4. The balance at Substantial Completion of the Schedule of Values line item for Documents and Close-Out in accordance with Subparagraph 9.2. shall only be approved for payment when all requirements under Paragraph 9.10 are complete. No partial payment of the Close-Out balance will be considered. Contractor agrees that Close-Out Requirements, in accordance with Paragraph 9.10, are part of the value of Work defined by the Contract Documents and shall not be construed to mean retainage. Any variation or deviation from this Paragraph 9.10 shall be made through an appropriate Modification in accordance with Article 7.

9.11. **FINAL COMPLETION AND FINAL PAYMENT**

- 9.11.1. Following completion of close-out requirements in accordance with Paragraph 9.10, and upon receipt of a written notice from the Contractor that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Design Professional will promptly make such inspection and, when the Design Professional finds the Work acceptable under the Contract Documents and the Contract fully performed, the Design Professional will promptly, with the Owner's prior approval, issue a Certificate of Final Completion and following approval by all parties, a final Certificate for Payment each stating that to the best of the Design Professional's knowledge, information and belief and on the basis of the Design Professional's or Design Professional's Project Representative's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Design Professional's issuance of Certificate of Final Completion and final Certificate for Payment will constitute a further representation that conditions listed in Subparagraphs 9.10 and 9.11.2 have been fulfilled as precedent to the Contractor's being entitled to final payment.

- 9.11.2. Final payment shall not become due until the Contractor submits to the Design Professional:

- 9.11.2.1. An affidavit that payrolls, bills for subcontracts, materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied;
- 9.11.2.2. Verification that all Department of Workforce Solutions certified payroll documents have been submitted;
- 9.11.2.3. A certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least forty-five (45) days following written notice to the Owner;
- 9.11.2.4. A written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents;

- 9.11.2.5. Consent of surety, if any, to final payment;
 - 9.11.2.6. Releases and waivers of claims of all Subcontractors, and suppliers; and,
 - 9.11.2.7. If required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor or other entity refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify and protect the Owner. If any claim remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such claim, including all costs and reasonable attorney's fees.
- 9.11.3. If, after Substantial Completion of the Work, Final Completion thereof is materially delayed through no fault of the Contractor or by issuance of changes in the Work affecting Final Completion, and the Design Professional so confirms, the Owner shall, upon application by the Contractor and certification by the Design Professional, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Design Professional prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.
- 9.11.4. The making of final payment shall constitute a waiver of Claims by the Owner except those arising from:
- 9.11.4.1. Claims, security interests or encumbrances arising out of the Contract and unsettled;
 - 9.11.4.2. Failure of the Work to comply with the requirements of the Contract Documents; or;
 - 9.11.4.3. Terms of special warranties required by the Contract Documents.
- 9.11.5. Acceptance of final payment by the Contractor, a Subcontractor or supplier shall constitute a waiver of Claims by that payee, except those previously made in writing and identified by the payee as unsettled at the time of final Application for Payment.
- 9.11.6. The Prompt Payment Act, Section 57-28-8 NMSA 1978, requires that ten days after certification of completion, any amounts remaining due the contractor or subcontractor under the terms of the contract shall be paid upon the presentation of the following:
- 9.11.6.1. A properly executed release and duly certified voucher for payment;
 - 9.11.6.2. A certified statement of Release of Liens (AIA Document G706A or approved form) and Consent of Surety;

- 9.11.6.3. A release, if required, of all claims and claims of lien against the owner arising under and by virtue of the contract other than such claims of the contractor, if any, as may be specifically excepted by the contractor or subcontractor from the operation of the release in stated amounts to be set forth in the release, and;
- 9.11.6.4. Proof of completion.

ARTICLE 10
PROTECTION OF PERSONS AND PROPERTY

10.1. SAFETY PRECAUTIONS AND PROGRAMS

- 10.1.1. The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract. The Owner may, but is under no obligation, point out unsafe conditions or operations.
- 10.1.2. The Contractor shall at all times conduct operations and take precautions under this Contract in a manner to avoid risk or bodily harm to persons on or around the Work site and to avoid risk of damage to any property. The Contractor shall continuously inspect the construction operations and shall cause Subcontractors and all other entities on or around the Project to be aware of dangers or risks and to comply with applicable health or safety laws, codes, standards and regulations applicable to the locale where the Project is located.

10.2. SAFETY OF PERSONS AND PROPERTY

- 10.2.1. The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to:
 - 10.2.1.1. Employees on the Work and other persons who may be affected thereby and shall include clean work site, well maintained equipment, barricades, safety awareness programs or whatever effort that will best accomplish required protection;
 - 10.2.1.2. Students, staff and public either nearby or within the Project site that shall include re-routing pedestrian ways, re-routing traffic, providing signage, building of bridges, barricades, pedestrian tunnels, or whatever effort that will best accomplish required protection;
 - 10.2.1.3. Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors; and
 - 10.2.1.4. Other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.
- 10.2.2. The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.
- 10.2.3. The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.
- 10.2.4. When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

- 10.2.5. The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contractor Documents) to property referred to in Subparagraphs 10.2.1.3 and 10.2.1.4 caused in whole or in part by the Contractor, a Subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible, except damage or loss attributable to acts or omissions of the Owner or Design Professional or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations stated throughout the Contract Documents.
- 10.2.6. The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent, unless otherwise designated by the Contractor in writing to the Owner and Design Professional.
- 10.2.7. The Contractor shall immediately report any accident causing serious bodily injury, death or serious property damage, to the Owner and the Design Professional and shall submit a written report of any such accident within five days of the accident. The Contractor shall also immediately report the matter to the proper authorities and comply with the reasonable instructions of the authority to address or correct any dangerous conditions.

10.3. **HAZARDOUS MATERIALS**

- 10.3.1. The Contractor is responsible for compliance with any requirements included in the Contract Documents. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and immediately report the condition to the Owner and Design Professional.
- 10.3.2. Upon receipt of written notice from the Contractor of the presence of hazardous materials or substances, the Owner shall obtain the services of a properly licensed testing laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to obtain the services of a remediation contractor to remove the hazard and to verify that it has been rendered harmless. The Owner shall notify the Contractor and the Design Professional of the names and qualifications of the person or entity who are to perform the tests and be responsible for the removal of the material substance. The Design Professional and the Contractor shall advise the Owner in writing of any objection they may have to the person or entity to perform the testing and removal of the hazardous material or substance. The Work will resume when the substance or material has been rendered harmless. "Rendered Harmless" shall mean that the levels of such materials are less than any applicable exposure levels, including but not limited to EPA regulations. By Modification the Owner and Contractor shall agree to extend the Contract Time appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs for shut-down and start-up.
- 10.3.3. The Owner shall be indemnified by the Contractor for the cost and expense the Owner incurs for remediation of a material or substance the Contractor brings to the site and negligently

handles, or where the Contractor fails to perform its obligation regarding safety as set forth above.

10.4. **EMERGENCIES**

10.4.1. In an emergency affecting safety of persons or property, the Contractor shall use its best efforts to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Paragraph 4.4.5. and Article 7.

ARTICLE 11
INSURANCE AND BONDS

11.1. LIABILITY INSURANCE

11.1.1. The Contractor and Subcontractors shall purchase from and maintain in a company or companies lawfully authorized to transact insurance in New Mexico, insurance that shall protect the Contractor and Subcontractors from claims set forth below, which may arise out of or result from operations under the Contract and for which the Contractor and Subcontractors may be legally liable, whether such operations be by the Contractor and Subcontractors or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- 11.1.1.1. Claims under Workers' Compensation, Disability Benefit and other similar Employee Benefit Acts, which are applicable to the Work to be performed;
- 11.1.1.2. Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
- 11.1.1.3. Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- 11.1.1.4. Claims for damage for personal injury;
- 11.1.1.5. Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting there from;
- 11.1.1.6. Claims for damages because of bodily injury, death of a person property damage arising out of ownership, maintenance or use of a motor vehicle;
- 11.1.1.7. Claims for bodily injury or property damage arising out of completed operations; and
- 11.1.1.8. Claims involving contractual liability insurance applicable to the Contractor's obligations under Paragraph 3.19. Provision of insurance does not limit the liability of the Contractor under 3.19.1 herein.

11.1.2. The Contractor shall ensure that liability insurance is maintained by Subcontractors, and may either insure the activities of Subcontractors or require them to maintain insurance to cover all claims in Article 11. If the Owner is damaged by the failure or neglect of the Contractor to maintain insurance as described above, then the Contractor shall be liable for all costs and damages properly attributable thereto.

11.1.3. The liability insurance coverage shall be written on an occurrence basis and shall be maintained without interruption from the date of commencement of the Work until date of Final Payment and termination of any coverage required to be maintained after final payment. The insurance policies will not be allowed to be cancelled or to expire until at least forty-five (45) days after notice of such expiration or cancellation to the Owner. Owner shall be named as an additional insured on any liability policy covering the Project issued to the Contractor. Contractor shall promptly notify Owner of any reduction of coverage on an account of revised limits or claims paid.

- 11.1.4. Upon expiration of the coverage provided by the liability insurance, the Contractor shall obtain a Completed Operations Liability policy, which will continue coverage up to the expiration of the Statute of Limitations for claims based on the negligent or defective performance or the Work by the Contractor.
- 11.1.5. The insurance company or companies insuring the Contractor shall submit Certificates of Insurance to the Owner that shall be in the appropriate ACORD form, or similar format acceptable to the Owner, and shall be delivered to the Owner prior to the commencement of the Work.
- 11.1.5.1. The Certificate shall provide that the District is the Certificate Holder, and the PSFA shall be listed as an additional insured on the Comprehensive General Liability form or Commercial Liability form furnished by the Contractor.
- 11.1.5.2. The Certificate of Insurance shall state that the coverage provided under the policy is primary to all other valid and collectible insurance.
- 11.1.5.3. These Certificates shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least forty-five (45) days after written notice of cancellation or expiration has been given to the Owner.
- 11.1.5.4. For any of the foregoing insurance coverages that are to remain in force after final payment, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment as required by Subparagraph 9.10. The Certificates of Insurance shall clearly state the coverages, limits of liability, covered operations, effective dates and dates of expiration of policies of Insurance. The Contractor will promptly notify and furnish to the Owner copies of any endorsements that are subsequently issued amending coverage or limits.
- 11.1.6. Minimum Required Coverages:
- 11.1.6.1. Worker's Compensation Insurance shall be provided as required by applicable New Mexico law for all employees engaged at the site of the Project under this Contract, including Subcontractor employees. In case any class of employee engaged in work on the Project under this Contract is not protected under the Worker's Compensation Statute, the Contractor shall provide, and cause each Subcontractor to provide Employer's Liability Insurance in an amount not less than five hundred thousand (\$500,000). Failure to comply with the conditions of this Subparagraph 11.1.6.1 will subject this Contract to termination. The following table outlines the minimum coverages for Liability Insurance:

Type of Coverage Required	Minimum Limits of Coverage
1. Workers' Compensation (including accident and disease coverage)	Statutory
2. Employer's Liability	\$500,000.00
3. Comprehensive General Liability (including endorsements providing broad form property damage coverage, personal injury coverage, and contractual assumption of liability coverage for all liability the Contractor has assumed under this Contract)	Bodily Injury: \$300,000.00 per person / \$1,000,000.00 per occurrence, and Property Damage: \$300,000.00 or combined single limit coverage of \$1,000,000.00 per occurrence
4. Auto Liability (including non-owned auto coverage)	Same limits as General Liability
5. Commercial Umbrella	\$5,000,000.00

11.2. OWNER'S LIABILITY INSURANCE

11.2.1. The Owner's liability shall be determined in accordance with the provisions of the New Mexico Tort Claims Act, Section 41-4-1 et seq. NMSA 1978, as it now exists or as amended,

11.3. PROPERTY INSURANCE

11.3.1. Builder's Risk Policy: Before commencing the Work, the Contractor shall secure and maintain, in a company authorized to do business in the State of New Mexico, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus the value of subsequent Contract Modifications.

11.3.2. The policy shall be issued by an insurance company with an A.M. Best rating of an AVI or better, that is acceptable to the Owner.

11.3.3. The insurance shall be maintained until final payment has been made or until no person or entity other than the Owner has an insurable interest in the covered property, whichever is later.

11.3.4. This insurance shall cover the interests of the Owner, Contractor, and Subcontractors of all tiers, as named insureds.

11.3.5. The Owner and Contractor shall be named as loss payee(s).

11.3.5.1. The policy, at a minimum, shall insure against the perils of fire, lightning, explosion, windstorm, hail, smoke, water from any source, aircraft (except aircraft, including helicopters, operated by or on behalf of the Contractor), vehicles, riot and civil commotion, terrorism, theft, vandalism, malicious mischief, earthquake, collapse, defective design, defective workmanship, defective materials and earth movement including mudslide. This insurance shall also include, at a minimum, additional coverages for the following:

1. Damage to land excavation, footings, and/or temporary structures;
2. Property in transit or in temporary storage;

3. Engineering, testing, applicable design and related soft costs;
4. Loss of use, delays in occupancy resulting from a covered cause of loss;
5. Fencing and signage;
6. Demolition and debris removal including pollutants;
7. Fire department service charges and refill of fire protection devices.

11.3.6. The Contractor shall be solely responsible for any deductible amounts or coinsurance penalties.

11.3.7. Boiler and Machinery Insurance. The Owner shall purchase and maintain Equipment Breakdown Coverage if required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner, this insurance shall include interests of the Owner, Contractor and Subcontractors in the Work.

11.4 **WAIVERS OF SUBROGATION**

11.4.1. The Owner and Contractor waive all rights against each other and any of their Subcontractors for damages caused by fire or other damage from the actions or failure to act on the part of the Owner, Contractor, Subcontractors or any of their agents or employees. The policy shall provide for a waiver of subrogation in favor of the Owner, Contractor, and Subcontractors of all tiers. This insurance shall remain in effect until the project is accepted by the Owner or occupied in whole or in part. Partial occupancy or use of the work shall not commence until the Owner has secured the consent of the insurance company or companies providing the coverage required in this subsection. Should any partial occupancy or use of the work occur prior to the foregoing consent being obtained, such partial occupancy or use does not create an automatic right of cancellation of the coverage required in this subsection.

11.5. **PERFORMANCE BOND AND PAYMENT BOND**

11.5.1. If the Contract Sum exceeds twenty-five thousand dollars (\$25,000.00), the Contractor shall post both a Performance Bond and a Payment Bond, satisfactory to the Owner, each in the amount of one hundred percent (100%) of the Contract Sum. The Bonds shall be executed by a surety company authorized to do business in this State of New Mexico and approved by the State Board of Finance, for the protection of all persons supplying labor and material to the Contractor or Subcontractors for the performance of the Work provided for in the Contract. The bonds must comply with the requirements of §13-4-18, NMSA 1978 and be delivered directly to the Owner within seven (7) days of the issuance of the Notice to Proceed. If the amount of the Contract Sum for the Work is increased, the amounts of the bonds shall be increased accordingly. Special attention is called to the requirements of Sections 13-4-18 through 13-4-20 (NMSA 1978) regarding a Contractor who does not have its principal place of business in the State of New Mexico, for all taxes due arising out of construction services rendered under the Contract.

11.5.1.1. A Subcontractor shall provide a performance and payment bond on a public works building project if the subcontractor's contract (to the Contractor) for work to be performed on a project is one hundred and twenty-five thousand dollars (\$125,000)

or more. Failure of a Subcontractor to provide required bond shall not subject the Owner to any increase in cost due to any substitution of an approved Subcontractor.

11.5.2. Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall permit a copy to be made.

11.5.3. The Owner and the parties to whom Sections 13-4-18 through 13-4-20, NMSA 1978 grant such right may sue to obtain performance or payment in accordance with the provisions and limitations of said statutes.

ARTICLE 12
UNCOVERING AND CORRECTION OF WORK

12.1. UNCOVERING OF WORK

- 12.1.1. If a portion of the Work is covered up contrary to the Design Professional's or Owner's request or to requirements specifically expressed in the Contract Documents, it must be uncovered for the Design Professional's and Owner's examination and be replaced at the Contractor's expense without change in the Contract Time.
- 12.1.2. If a portion of the Work has been covered, which the Design Professional has not specifically requested to examine prior to its being covered, the Design Professional may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Modification in accordance with Article 7, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

12.2. CORRECTION OF WORK

12.2.1. Before Or After Substantial Completion

- 12.2.1.1. The Contractor shall promptly correct Work rejected by the Owner or Design Professional or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such defective Work, including additional testing and inspections and compensation for the Design Professional's services and expenses made necessary thereby, shall be at the Contractor's expense.

12.2.2. After Substantial Completion

- 12.2.2.1. In addition to any obligation under the warranty provisions of this Contract, the Contractor have the obligation to correct any of the Work that is not in accordance with the requirements of the Contract Documents for one year after substantial Completion, as set forth in this Paragraph. Promptly after discovering the Work is not in accordance with the requirements of the Contract Documents, the Owner shall give written notice to the Contractor to correct said Work. The Contractor shall promptly take the necessary corrective action. If the Contractor fails to correct the nonconforming Work within a reasonable time period after receipt of notice from the Owner or Design Professional, the Owner may correct it in accordance with Paragraph 2.4. The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work. The time period shall not be extended for any corrective Work performed by the Owner. The Contractor shall remove from the site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

- 12.2.3. The Contractor shall remove from the site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.
- 12.2.4. The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents.
- 12.2.5. Nothing contained in Paragraph 12.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents or law. Establishment of the one-year period for correction of Work as described in Subparagraph 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.
- 12.2.6. Eleven (11) months after Substantial Completion, the Design Professional shall coordinate, with the Owner and the Contractor, an 11-Month Correction Period Inspection of all portions of the Work. Any Work found defective or needing adjustment or other correction in order to function and operate in accordance with the indication of the Contract Documents shall be promptly completed by the Contractor within twenty (20) days, or as otherwise agreed between the parties. The Owner may make such corrections or adjustments in accordance with Paragraph 2.4.

12.3. ACCEPTANCE OF NONCONFORMING WORK

- 12.3.1. If the Owner prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13
MISCELLANEOUS PROVISIONS

13.1. LAW

- 13.1.1. The Contract shall be governed by the laws of the State of New Mexico and parties agree that the State of New Mexico District Court of the County, where the Project is located, shall have exclusive jurisdiction to resolve all Claims, issues and disputes not otherwise resolved in accordance with the Contract Documents.
- 13.1.2. All Work shall be completed in accordance with and shall be inspected within requirements of the Construction Industries Licensing Act, Chapter 60, Article 13 NMSA 1978.

13.2. SUCCESSORS AND ASSIGNS

- 13.2.1. The Contractor shall not assign the Contract or proceeds hereof without written consent of the Owner. If contractor attempts to make such an assignment without such consent, it shall be void and confer no rights to third parties; the Contractor shall nevertheless remain legally responsible for all obligations under the Contract. Any consent of the Owner to such assignment shall be written and include "it is agreed that the funds to be paid to the assignee under this assignment are subject to performance by the Contractor and to claims for services rendered or materials supplied for the performance and of the Work and other obligations of the Contract Documents in favor of any entity rendering such services or providing such materials".

13.3. WRITTEN NOTICE

- 13.3.1. Written notice shall be deemed to have been duly served if delivered in person to the individual or a member of the firm or entity or to an officer of the corporation for which it was intended, or if delivered at or sent by Registered or Certified Mail, Federal Express, or similar service with proof of delivery to the last business address known to the party giving notice identified in Part A of this Agreement.

13.4. RIGHTS AND REMEDIES

- 13.4.1. Duties and obligations imposed by the Contract Documents, and rights and remedies available there under, shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.
- 13.4.2. No action or failure to act by the Owner, Design Professional or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval or acquiescence in a breach there under, except as may be specifically agreed in writing.
- 13.4.3. Contractor shall carry out the Work without delay in accordance with the Contract Documents during any and all disputes or disagreements, unless otherwise agreed to by the Owner in writing.

13.5. TEST AND INSPECTIONS

- 13.5.1. Tests, inspections and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made at an appropriate time. Unless otherwise provided by Subparagraph 2.3.4. or elsewhere in the Contract Documents, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, provided by the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals unless otherwise provided in the Contract Documents. The Contractor shall give the Owner and Design Professional timely notice of when and where tests, inspections, and approvals are to be made, so the Design Professional may be present for such procedures. All sampling, transportation, and storage of samples, testing, and reporting shall be undertaken by representatives of the testing laboratory. No sampling, transportation, and storage of samples, nor testing, nor reporting shall be undertaken by the Design Professional, the Owner, the Contractor, or the Subcontractors.
- 13.5.2. Special or Additional Testing: If the Design Professional, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Subparagraph 13.5.1, the Design Professional will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Design Professional of when and where tests and inspections are to be made so that the Design Professional may be present for such procedures. Such costs, except as provided in Subparagraph 13.5.3, shall be at the Owner's expense.
- 13.5.3. If such procedures for testing, inspection, or approval under Subparagraphs 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Design Professional's services and expenses shall be at the Contractor's expense.
- 13.5.4. Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Design Professional and to the Owner.
- 13.5.5. If the Design Professional is to observe tests, inspections or approvals required by the Contract Documents, the Design Professional will do so promptly and, where practicable, at the normal place of testing.
- 13.5.6. Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

13.6. COMMENCEMENT OF STATUTORY LIMITATION PERIOD

- 13.6.1. All causes of action between the Owner and Contractor, whether in contract, tort, breach of warranty or otherwise, arising out of or related to the Contract shall be filed within the time periods established by the Laws of the State of New Mexico, but in any case not more than ten (10) years from the date of Substantial Completion.

13.7. EQUAL EMPLOYMENT OPPORTUNITY

13.7.1. The Contractor and Subcontractors shall not discriminate against any applicant for employment or any employee based on race, color, national origin, ancestry, religion, sex, pregnancy, sexual orientation, gender identity, age, physical or mental disability, spousal affiliation, genetic information, and military or veteran status. The Contractor and Subcontractors shall be responsible for being aware of the creation of additional protected classes under federal or state law. The Contractor and Subcontractors shall avoid discrimination against any existing or newly created protected classes in considering applications for employment and in its employment practices. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of nondiscrimination of the Contractor and Subcontractor. All solicitation or advertisement for employees placed by them or on their behalf shall state that all qualified applicants will receive consideration for employment and the benefits of employment on a nondiscriminatory basis.

13.8. COMPLIANCE WITH NEW MEXICO PUBLIC WORKS MINIMUM WAGE ACT

13.8.1. Wage-Rate Determination: The Work performed by the Contractor and Subcontractors is subject to the requirements of the New Mexico Public Works Minimum Wage Act (PWMWA). The Contractor and Subcontractors shall obtain a wage-rate determination from the New Mexico Department of Public Works Labor Relation Division (LRD) and shall pay wages and benefits in compliance with the Public Works Policy Manual for the year in which the Project benefits or as otherwise provided by the PWMWA.

13.8.1.1. Sanctions of Failure to Comply: The Contractor and Subcontractors shall comply with all requirements of the PWMWA in the performance of the Work. In the event the Director of the LRD determines the Contractor is not in compliance with the PWMWA and directs the Owner to withhold payment from the Contractor or terminate the Contract, the Owner shall comply with the determination made by the LRD Director. The Owner may request copies of certified payrolls from the Contractor to verify compliance with the PWMWA and the Contractor shall provide copies of the certified payrolls to the Owner immediately upon request, but Owner is not required to obtain or maintain copies of said certified payrolls.

13.8.1.2. Posting of Information Regarding the PWMWA at Worksite: Information regarding wages and benefits to be paid to employees pursuant to the PWMWA shall be posted by the Contractor at the worksite in accordance with the PWMWA and the Rules and Regulations of the LRD.

13.8.2. Apprentices: The Contractor and Subcontractors shall comply with the requirements of the Public Works Apprenticeship and Training Act by contributing to approved apprentice and training programs as specified in the Public Works Policy Manual issued by the LRD. Except as otherwise required by law, the number of apprentices in each trade or occupation employed by the Contractor and Subcontractors, material suppliers and equipment suppliers shall not exceed the number permitted by the applicable standards of the United States Department of Labor or New Mexico Construction Industries Division.

13.9. ON-THE-JOB RELATIONS WITH CONTRACTOR

13.9.1. The Contractor shall at all times have competent superintendent(s) or foremen on the job in immediate charge of the Work who shall receive communications from Design Professional or Owner in the prosecution of the Work, in accordance with the Contract Documents. Any person executing the Work, who in the opinion of the Design Professional or the Owner, appears to be incompetent or act in a disorderly or intemperate manner or violating provisions of the Contract Documents, shall upon written request, be immediately removed from the Project and not again be employed on any part of the Work. Failure to comply with this Subparagraph shall be, upon the Owner's decision, cause to immediately stop the Work in accordance with Paragraph 14.2.

13.10. EMPLOYEE BACKGROUND CHECKS

13.10.1. The Contractor shall be responsible for complying with the security requirements of the Owner including the background check provisions of Section 22-10A-5 NMSA 1978, pertaining to badging requirements and the need for proper escorts.

13.11. RECORDS

13.11.1. In the event of a dispute between Owner and Contractor, the Owner shall have right to discovery and access to and the right to examine any accounting or other records of the Contractor involving transactions and Work related to this Contract for three (3) years after Final Payment or after final resolution of any disputes, whichever is later. The conditions of this paragraph apply equally to Subcontractors and suppliers.

ARTICLE 14
TERMINATION OR SUSPENSION OF THE CONTRACT

14.1. TERMINATION BY THE CONTRACTOR

14.1.1. Work Stoppage for Thirty Days (30): The Contractor may terminate the Contract if the Work is stopped for a period of thirty (30) consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or any other persons or entities performing portions of the Work under the contract with the Contractor, for any of the following reasons:

14.1.1.1. Issuance of an order of a court or other public authority having jurisdiction which requires all Work to be stopped;

14.1.1.2. An act of government, such as a declaration or national emergency which requires all Work to be stopped;

14.1.1.3. The Design Professional has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Subparagraph 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or

14.1.1.4. The owner has failed to furnish to the Contractor promptly, upon the Contractor's written request, reasonable evidence of funding as required by Subparagraph 2.3.1.

14.1.2. The Contractor may terminate the Contract if, through no act or no fault of the Contractor or a Subcontractor or their agents or employees or any other persons or entities performing portions of the Work under contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Paragraph 14.3 constitute in the aggregate more than one hundred percent (100%) of the total number of days scheduled for completion, or one hundred twenty (120) days in any 365-day period, whichever is less.

14.1.3. If one of the reasons described in Subparagraph 14.1.1 or 14.1.2 exists, the Contractor may, upon seven (7) days written notice to the Owner and Design Professional, terminate the Contract and recover from the Owner payment for Work executed, including overhead and profit in accordance with Article 7 for Work performed, and for proven loss with respect to materials, equipment, tools, and construction equipment and machinery excluding, overhead and profit.

14.1.4. If the Work is stopped for a period of sixty (60) consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portion of the Work under contract with the Contractor because the Owner has persistently failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven (7) additional days written notice to the Owner and the Design Professional, terminate the Contract and recover from the Owner as provided in Subparagraph 14.1.3.

14.2. TERMINATION BY THE OWNER FOR CAUSE

14.2.1. The Owner may terminate the Contract if the Contractor:

14.2.1.1. Refuses or fails to supply enough properly skilled workers or proper materials;

- 14.2.1.2. Fails to make payment to Subcontractors for material or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
 - 14.2.1.3. Disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction;
 - 14.2.1.4. Disregards the authority of the Owner or Design Professional;
 - 14.2.1.5. Fails after commencement of the Work to proceed day-to-day continuously with the construction and completion of the Work for more than ten (10) days, except as permitted under the Contract Documents;
 - 14.2.1.6. Fails to maintain owner approved schedule or owner approved recovery schedule; and,
 - 14.2.1.7. Is otherwise guilty of substantial breach of a provision of the Contract Documents.
- 14.2.2. Rights of Owner Upon Termination: When any of the above reasons exist, the Owner may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety notice, as required by the surety bonds, if any, seven (7) days written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:
- 14.2.2.1. Take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
 - 14.2.2.2. Accept assignment of subcontracts pursuant to Paragraph 5.4; and
 - 14.2.2.3. Finish the Work by whatever reasonable method the Owner may deem expedient. Upon request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.
- 14.2.3. No Additional Interim Payment to Contractor: When the Owner terminates the Contract for one of the reasons stated in Subparagraph 14.2.2., the Contractor shall not be entitled to receive further payment until the Work is finished.
- 14.2.4. Payment to or by Contractor upon Completion: If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Design Professional's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owners shall be certified by the Design Professional upon application.
- 14.2.5. In carrying out the Owner's right to complete the Work in accordance with Paragraph 14.2, the Owner shall have the right to exercise the Owner's sole discretion as to the manner, methods and reasonableness of costs of completing the Work.

14.3. SUSPENSION BY THE OWNER FOR CONVENIENCE

14.3.1. The Owner may, without cause order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine. The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in this Subparagraph 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent:

14.3.1.1. That performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or

14.3.1.2. That an equitable adjustment is made or denied under another provision of the Contract.

14.4. TERMINATION BY THE OWNER FOR CONVENIENCE OR WITHOUT CAUSE

14.4.1. Right to Terminate: The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause. The contract may be terminated if sufficient appropriations or authorizations do not exist. Such terminations will be affected by sending written notice to the Contractor. The Owner or Agency's decision as to whether sufficient appropriations and authorizations are available will be accepted by the Contractor as final.

14.4.2. Contractor Response: Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall:

14.4.2.1. Cease operation as directed by the Owner in the notice;

14.4.2.2. Take action necessary, or that the Owner may direct, for the protection and the preservation of the Work; and

14.4.2.3. Except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing Subcontracts and Purchase Orders.

14.4.2.4. Payment to Contractor upon Termination for Convenience: in case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work completed.

ACKNOWLEDGEMENT OF RECEIPT OF GENERAL CONDITIONS

Signature Required

I hereby acknowledge receipt of the General Conditions of the Contract for Construction between the Owner and the Contractor, 2022 Edition 7.1.22, Part B of the Contract.

Authorized Signature: _____ Date: _____

Title: _____

Firm Name: _____

SUPPLEMENTARY CONDITIONS

MODIFICATION TO GENERAL CONDITIONS

1.0 Add One (1) additional year to Project Warranty, for a total of Two (2) years Project Warranty.

ADDITIONAL CONDITIONS

2.0 NOT USED

2.1 NOT USED

2.2 NOT USED

3.0 ENERGY STAR®

3.1 This Project is NOT required to be designed to achieve an EPA ENERGY STAR rating.

INSTRUCTIONS:

The State Minimum Wage Rate Determination and related documents issued for this specific project shall be inserted on this page.

NOTE: Not required if project is less than \$60,000 (effective June 17, 2005)



TYPE “B” – GENERAL BUILDING

Effective January 1, 2024

Trade Classification	Base Rate	Fringe Rate	Apprenticeship
Asbestos Workers/Heat and Frost insulators	35.86	12.46	0.60
Asbestos Workers/Heat and Frost insulators: Los Alamos County	38.29	12.46	0.60
Boilermaker/blacksmith	35.88	32.28	0.60
Boilermaker/blacksmith: San Juan County	36.83	31.88	0.60
Bricklayer/Block layer/Stonemason	27.03	10.99	0.60
Bricklayer/Block layer/Stonemason Curry, DeBaca, Quay and Roosevelt counties	23.10	8.98	0.60
Bricklayer/Block layer/Stonemason Dona Ana, Otero, Eddie and Lea counties	26.42	8.98	0.60
Carpenter/Lather	29.11	12.79	0.60
Carpenter: Los Alamos County	33.18	13.58	0.60
Millwright/pile driver	39.00	29.40	0.60
Cement Mason	24.31	11.16	0.60
Electricians-Outside Classifications: Zone 1			
Ground man	26.32	12.79	0.60
Equipment Operator	37.76	17.13	0.60
Lineman/technician	47.70	19.92	0.60
Cable Splicer	48.87	20.22	0.60

Electricians-Outside Classification: Zone 2			
Ground man	26.32	12.79	0.60
Equipment Operator	37.76	17.13	0.60
Lineman/technician	47.70	19.92	0.60
Cable Splicer	48.87	20.22	0.60
Electricians-Outside Classifications: Los Alamos County			
Ground man	27.07	12.81	0.60
Equipment Operator	38.85	17.17	0.60
Lineman/technician	48.95	20.24	0.60
Cable Splicer	53.75	21.44	0.60
Electricians-Inside Classifications: Zone 1			
Wireman/low voltage technician	38.30	12.60	0.60
Cable Splicer	42.13	12.71	0.60
Electricians-Inside Classification: Zone 2			
Wireman/low voltage technician	41.75	12.70	0.60
Cable Splicer	45.58	12.82	0.60
Electricians-Inside Classification: Zone 3			
Wireman/low voltage technician	44.05	12.72	0.60
Cable Splicer	47.88	12.89	0.60
Electricians-Inside Classification: Zone 4			
Wireman/low voltage technician	48.26	12.90	0.60
Cable Splicer	52.09	13.01	0.60
Electricians-Inside Classification: Dona Ana, Hidalgo, Luna and Otero Counties			
Wireman/low voltage technician	32.72	9.65	0.60
Cable splicer	32.72	9.65	0.60

Electricians-Inside Classification: Los Alamos County			
Wireman/low voltage technician	44.05	14.97	0.60
Cable Splicer	47.88	15.28	0.60
Elevator Constructor	49.77	39.19	0.60
Elevator Constructor Helper	34.84	39.19	0.60
Glazier/Fabricator	21.75	7.10	0.60
Glazier: Los Alamos county	21.75	7.10	0.60
Ironworker			
Ironworker Journeyman	28.49	18.71	0.60
Probationary Ironworker	22.79	18.71	0.60
Painter	21.00	5.75	0.60
Painter: Los Alamos county	31.18	11.50	0.60
Paper Hanger	21.00	5.75	0.60
Paper Hanger: Los Alamos county	32.06	11.50	0.60
Drywall Finisher/Taper - Light Commercial & Residential			
Ames tool operator	27.40	8.86	0.60
Hand finisher/machine texture	26.40	8.86	0.60
Drywall Finisher/Taper – Light Commercial & Residential: Los Alamos county	21.18	11.50	0.60
Plasterer	24.76	9.99	0.60
Plumber/Pipefitter	36.91	14.75	0.60
Roofer			
Roofer Journeyman	26.94	9.36	0.60
Roofer Helper	16.16	9.36	0.60
Sheet metal worker			
Zone 1	37.50	19.08	0.60
Zone 2 – Industrial	38.50	19.08	0.60
Zone 3 – Los Alamos County	39.50	19.08	0.60
Soft Floor Layer	21.00	9.20	0.60

Soft Floor Layer: Los Alamos county	31.20	11.62	0.60
Sprinkler Fitter	35.75	24.56	0.60
Tile Setter	24.46	8.81	0.60
Tile Setter Helper/Finisher	16.53	8.81	0.60
Laborers			
Group I- Unskilled	20.44	7.96	0.60
Group II – Semi-skilled	20.44	7.96	0.60
Group III- Skilled	21.44	7.96	0.60
Group IV - Specialty	23.69	7.96	0.60
Operators			
Group I	24.49	8.22	0.60
Group II	26.76	8.22	0.60
Group III	27.24	8.22	0.60
Group IV	27.70	8.22	0.60
Group V	27.90	8.22	0.60
Group VI	28.12	8.22	0.60
Group VII	28.23	8.22	0.60
Group VIII	31.43	8.22	0.60
Group IX	33.94	8.22	0.60
Group X	37.51	8.22	0.60
Truck Drivers			
Group I-VII	16.65	8.27	0.60
Group VIII	16.71	8.27	0.60
Group IX	18.65	8.27	0.60

NOTE: All contractors are required to pay SUBSISTENCE, ZONE AND INCENTIVE PAY according to the particular trade. Details are located in a PDF attachment at WWW.DWS.STATE.NM.US. Search Labor Relations/Labor Information/Public Works/Prevailing Wage Rates.

For more information about the Subsistence, Zone, and Incentive Pay rates, or to file a wage claim, contact the Labor Relations Division at (505) 841-4400 or visit us online at www.dws.state.nm.us.

PUBLIC WORKS PROJECT REQUIREMENTS

As a participant in a Public Works project valued at more than \$60,000 in the state of New Mexico, the following list addresses many of the responsibilities that are defined by statute or regulation to each project stakeholder.

Contracting Agency

- Ensure that all contractors wishing to bid on a Public Works project when the project is \$60,000 or more are actively registered with the Public Works and Apprenticeship Application (PWAA) website: <http://www.dws.state.nm.us/pwaa> (Contractor Registration) prior to bidding.
- Please submit Notice of Award (NOA) and Subcontractor List(s) to the PWAA website promptly after the project is awarded.
- Please update the Subcontractor List(s) on the PWAA website whenever changes occur.
- All sub-contractors and tiers (excluding professional services) regardless of contract amount must be listed on the Subcontractor List and must adhere to the Public Works Minimum Wage Act.
- Ninety days after project completion please go into the PWAA system and close the project. Only contracting agencies are allowed to close the project. Agents or contractors are not allowed to close projects.

General Contractor

- Provide a complete Subcontractor List and Statements of Intent (SOI) to Pay Prevailing Wages for all contractors, regardless of amount of work, to the contracting agency within 3 (three) days of award.
- Ensure that all subcontractors wishing to bid on a Public Works project have an active Contractor Registration with the Public Works and Apprenticeship Application (PWAA) website: <http://www.dws.state.nm.us/pwaa> prior to bidding when their bid will exceed \$60,000.
- Make certain the Public Works Apprentice and Training Act contributions are paid either to an approved Apprenticeship Program or to the Public Works Apprentice and Training Fund.
- Confirm the Wage Rate poster, provided in PWAA, is displayed at the job site in an easily accessible place.
- When the project has been completed, make sure the Affidavits of Wages Paid (AWP) are sent to the contracting agency.
- All subcontractors and tiers (excluding professional services) regardless of contract amount must pay prevailing wages, be listed on the Subcontractor List, and adhere to the Public Works Minimum Wage Act.

Phone: 505-841-4400
Fax: 505-841-4424



Subcontractor

- Ensure that all subcontractors wishing to bid on a Public Works project have an active Contractor Registration with the Public Works and Apprenticeship Application (PWAA) website: <http://www.dws.state.nm.us/pwaa> prior to bidding when their bid will exceed \$60,000.
- Make certain the Public Works Apprentice and Training Act contributions are paid either to an approved Apprenticeship Program or to the Public Works Apprentice and Training Fund.
- All subcontractors and tiers (excluding professional services) regardless of contract amount must pay prevailing wages, be listed on the Subcontractor List, and adhere to the Public Works Minimum Wage Act.

Additional Information

Reference material and forms may be found in the New Mexico Department of Workforce Solutions Public Works web pages at: <https://www.dws.state.nm.us/Labor-Relations/Labor-Information/Public-Works>.

CONTACT INFORMATION

Contact the Labor Relations Division for any questions relating to Public Works projects by email at public.works@state.nm.us or call (505) 841-4400.



2024 SUBSISTENCE, ZONE, AND INCENTIVE PAY RATES

All contractors are required to pay subsistence, zone, and incentive pay according to the particular trade

Asbestos workers or heat and frost insulators

- (1) Zone 1 shall consist of the area lying within the city limits of a circle whose radius is 66 miles from the city hall in Albuquerque or the city hall in El Paso - \$0.00 per day.
- (2) Zone 2 shall consist of Los Alamos county - \$40.00 per day if not furnished a company owned vehicle.
- (3) Zone 3 shall consist of the area lying beyond a circle whose radius is over 66 miles from the city hall in Albuquerque or the city hall in El Paso - \$85.00 per day.

Boilermakers/Blacksmiths

- (1) Per diem is calculated from city hall of the dispatch city or the employee's home address, whichever is closer to the job location,
- (2) Per diem is \$55.00 per day for travel between 70 and 120 miles and \$85.00 per day for travel over 120 miles.

Bricklayers

- (1) For Albuquerque area contractors, the starting point shall be at the intersection of I-40 and I-25 and shall continue to the job site. All other areas, the starting point shall be the employer's main office address.
- (2) Between 50 and 75 miles from the starting point, \$35.00 per day.
- (3) 76 or more miles from the starting point, \$55.00 per day.
- (4) All covered refractory work over 75 miles from the intersection of I-40 and I-25, \$80.00 per day.

Cement Masons

- (1) For employees who travel to Santa Fe from Albuquerque or vice versa, \$20.00 per day.
- (2) In all other work performed more than 50 miles from the employer's main office, \$50.00 per day.
- (3) Mutually agreed-upon lodging or transportation paid for by the employer will substitute for subsistence pay.

Drywall Finishers and Tapers

- (1) \$40.00 per day (\$5.00 per hour for eight hours work) for over 60 miles over the most typically traveled route, or other mutually agreed upon suitable lodging or transportation.
- (2) If an employee has worked the full week on four 10-hour days, the employee shall be paid the full week of per diem of \$200.00.
- (3) Special provision for Santa Fe and Albuquerque: Employees who travel between Santa Fe and Albuquerque will be paid \$15.00 per day or other mutually agreed upon lodging or transportation.

Electricians (inside classifications)

- (1) For Albuquerque only:
 - (a) Zone 1 is classified as being within 40 miles from the main post office.
 - (b) Zone 2 shall extend up to 10 miles beyond zone 1. Work performed within zone 2 shall be compensated nine percent above the journeyman rate for zone 1.
 - (c) Zone 3 shall extend up to 20 miles beyond zone 1. Work performed within zone 3 shall be compensated fifteen percent above the journeyman rate for zone 1.
 - (d) Zone 4 shall extend 20 miles or more beyond zone 1. Work performed within zone 4 shall be compensated twenty six percent above the journeyman rate for zone 1.
- (2) For Los Alamos County only: work performed within the county shall be compensated fifteen percent above the zone 1 journeyman rate.
- (3) For all other counties:
 - (a) Zone 1 is:
 - (i) within six miles from the main post office for Raton, Tucumcari, and Farmington.
 - (ii) within eight miles from the main post office for Las Vegas.
 - (iii) within ten miles from the main post office for Santa Fe and Gallup.
 - (iv) within twelve miles from the main post office for Belen, Carrizozo, Clovis, Los Lunas, Portales, Roswell, Ruidoso, Artesia, Carlsbad, Hobbs, and Lovington.
 - (v) within fourteen miles from the main post office for Espanola.
 - (b) Zone 2 shall extend up to 20 miles beyond zone 1. Work performed within zone 2 shall be compensated nine percent above the journeyman rate for zone 1.

- (c) Zone 3 shall extend up to 30 miles from zone 1. Work performed within zone 3 shall be compensated fifteen percent above the journeyman rate for zone 1.
- (d) Zone 4 shall extend beyond 30 miles from zone 1. Work performed within zone 4 shall be compensated twenty six percent above the journeyman rate for zone 1.
- (4) When workers are ordered to report to the shop and then to the job and from job to job, and return to the shop, they shall be paid for the time spent traveling and shall be furnished transportation by the Employer. Under these conditions the Zone 1 rate and any applicable overtime will be paid.

Electricians (outside classification)

Zone 2: \$50.00 per diem to be paid for work 30 miles outside of Santa Fe and 60 miles outside of Albuquerque. No per diem in Los Alamos County.

Glaziers

- (1) When out-of-town travel is required, the employer shall provide suitable lodging with no more than two people per room and \$20.00 per night for food.
- (2) Employees required to use a personal vehicle for travel to a jobsite beyond a 30 mile radius of the main post office in town where the employer's shop is located shall be compensated at the current Internal Revenue Service (IRS) rate for actual mileage incurred beyond the 30 mile radius, plus their regular rate of pay for travel time.

Ironworkers

- (1) Travel more than 50 miles from the interchange of Interstate 40 and Interstate 25 or from the employee's home should be paid at \$9.00 per hour.
- (2) If travel is within Santa Fe County, travel time shall be paid at \$3.00 per hour.

Laborers

- (1) Type A:
 - (a) Work travel between 50 and 85 miles from the employer's primary address should be compensated at \$3.50 per hour.
 - (b) Work travel 86 miles or greater from the employer's primary address should be compensated at \$5.00 per hour.

- (2) Types B and C:
 - (a) Work travel over 70 miles from the union halls of Albuquerque, Espanola, Farmington, or Las Cruces shall be paid at \$7.00 per hour in travel pay, not to exceed 10 hours per day;
 - (b) If an overnight stay is necessary, the employer shall pay \$40.00 per day for meals, in addition to travel pay.
- (3) Type H – no zone subsistence pay:
- (4) If an employer provides the employee transportation and mutually agreeable, suitable lodging with no more than two people in a room in areas where overnight stays are necessary, subsistence rates do not apply.

Millwrights

- (1) All zone pay shall be calculated from the address of the city hall of the respective dispatch point.
- (2) Zone 1: Work traveled up to 45 miles from the city hall of the respective dispatch points is a free zone.
- (3) Zone 2: Work traveled between 45 miles and 100 miles shall be compensated at \$4.00 per hour above base wage.
- (4) Zone 3: Work traveled 101 miles or more shall be compensated at \$6.00 per hour above base wage.
- (5) If employer fails to provide suitable lodging, employer shall pay \$110.00 per diem.
- (6) If an employee's principal place of residence is within 45 road miles from the project, no subsistence or travel time shall be paid.

Operating Engineers

- (1) Type A operators should be compensated for zone and subsistence as follows:
 - (a) Work travel between 50 and 85 miles from the interchange of Interstate 25 and Interstate 40 in Albuquerque, or from the Farmington City Hall in Farmington, should be compensated at \$2.50 per hour.
 - (b) Work travel 86 miles or more from the interchange of Interstate 25 and Interstate 40 in Albuquerque or from the Farmington City Hall in Farmington, should be compensated at \$4.00 per hour.
- (2) Type B and C operators:
 - (a) Base points for operators are 30 miles and beyond:
 - (i) Bernalillo county courthouse in Albuquerque;
 - (ii) State capital building in Santa Fe;
 - (iii) City hall in Farmington.

- (b) Zone and subsistence for Albuquerque, Santa Fe, and Farmington are as follows:
 - (i) work travel between 30 and 50 miles from the base point compensated at \$20.00 per day;
 - (ii) work travel between 51 and 100 miles from the base point compensated at \$50.00 per day;
 - (iii) work travel over 100 miles from the base point that involves an overnight stay compensated at \$100.00 per day.
 - (c) Zone and subsistence for Los Alamos county, \$100.00 per day. This takes precedence over the 50 mile radius for Santa Fe zone and subsistence.
 - (d) If an employer provides the employee transportation and mutually agreeable suitable lodging in area where overnight stays are necessary, subsistence rates do not apply.
- (3) Type H operators are not eligible for zone and subsistence pay.

Painters

- (1) When out-of-town travel is required, the employer shall provide suitable lodging with no more than two people per room and \$30.00 per day for expenses.
- (2) When out-of-town travel is required and employer and employer does not provide lodging, employer shall pay \$100 per day for expenses, plus their regular rate of pay.
- (3) Employees required to use a personal vehicle for travel to a jobsite beyond a 60-mile radius from their residence or the employer's shop, whichever is closest to the job, shall be compensated at the current IRS rate for actual mileage incurred beyond the 60-mile radius, plus their regular rate of pay for travel time.
- (4) Employer shall furnish transportation or gasoline for all work performed beyond the 30-mile radius that encompasses the free cities of Albuquerque, Santa Fe, and Belen.

Paper hangers

- (1) Zone 1: Base pay for an area within a 30 mile radius from the main post office in the city or town where the employee permanently resides. Albuquerque, Santa Fe, and Belen shall be considered Zone I.
- (2) Zone 2: Work travel between 30 and 75 miles from the main post office in the town where an employee permanently resides shall be compensated at \$1.00 per hour above base pay.

- (3) Zone 3: Work travel 75 miles or more from the main post office in the town where an employee permanently resides shall be compensated at \$2.50 per hour above base pay.
- (4) When the employee is required to stay overnight, the employer should provide and pay for suitable lodging.
- (5) Employer will furnish transportation or gasoline for all work performed beyond the 30 mile radius that encompasses the free cities of Albuquerque, Santa Fe or Belen.

Plasterers

- (1) Employees who travel from Albuquerque to Santa Fe should be compensated at \$20.00 per day.
- (2) Except for employees who travel from Santa Fe to Albuquerque, work travel 75 miles or more from the employer's office over the most typically traveled route should be compensated at \$5.00 per hour and capped at \$40.00 per day.

Plumbers and pipefitters

- (1) Work travel for 90 or more miles from an employee's primary residence, and involving an overnight stay, should be compensated at \$80.00 per day.
- (2) No zone or subsistence pay is required should the employer elect to cover the room cost.

Roofers

Work travel requiring an overnight stay should be compensated at \$35.00 per day for food. Employer should provide and pay for a suitable hotel. When employees are assigned to jobs located 60 or more miles from the employer's place of business, transportation to and from the job site must be provided.

Sheet metal workers

- (1) Work travel 90 miles or more from contractor's home base and employee's home, should be paid at \$120.00 per day subsistence pay plus base and fringe, regardless of county.
- (2) Los Alamos county: \$2.00 per hour incentive pay plus base and fringe.
- (3) Workers living 60 or more miles from a San Juan county job site receive \$3.00 per hour subsistence pay plus base and fringe.

Soft floor layer

- (1) Zone 1: Base pay for an area within a 30 mile radius from the main post office in the city or town where the employee permanently resides. Albuquerque, Santa Fe, and Belen shall be considered Zone I.
- (2) Zone 2: Work travel between 30 and 75 miles from the main post office in the town where an employee permanently resides shall be compensated at \$1.00 per hour above base pay.
- (3) Zone 3: Work travel 75 miles or more from the main post office in the town where an employee permanently resides shall be compensated at \$3.13 per hour above base pay.
- (4) Employer will furnish transportation or gasoline for all work performed beyond the 30-mile radius that encompasses the free cities of Albuquerque, Santa Fe, or Belen.
- (5) When the employee is directed to report to a job site and the distance to the job site requires the employee to stay out of town overnight, the employer shall provide housing arrangements for the affected employees.

Sprinkler fitters

- (1) Work travel between 60 and 80 miles from the employee's primary residence should be compensated at \$23.00 per day.
- (2) Work travel between 81 and 100 miles from the employee's primary residence should be compensated at \$33.00 per day.
- (3) Work travel of 101 miles or more from the employee's primary residence should be compensated at \$125.00 per day.
- (4) No zone or subsistence pay shall be paid when the employer provides daily transportation and the employee elects to travel back and forth from home.

SECTION 01 1000

SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Work sequence.
2. Contractor use of site.
3. Definitions.
4. Abbreviations.

B. Related documents and sections:

1. Document 00 7200 - General Conditions of the Contract
 - a. [Article 2]: Basic responsibilities and rights of Owner.
 - b. [Article 3]: Basic responsibilities of Contractor.
 - c. [Article 6]: Owner's right to award separate contracts.
2. Section 01 2300 - Alternates: NOT USED

1.2 WORK SEQUENCE

- A. No phased construction.
- B. See Section 01 3100 – Project Management and Coordination and Division 07 roofing specifications for related requirements.]

1.3 CONTRACTOR USE OF SITE

- A. Contractor will have unrestricted use of site.

1.4 CONTRACTOR'S PERSONNEL JOBSITE RESTRICTIONS

- A. Contractor shall enforce the following requirements on his entire workforce throughout the progress of the Work:

1. All personnel on site, directly or indirectly in the employ of Contractor, are restricted from any interaction with any Owner, Owner's staff, students, or other members of the public while on, or adjacent to Owner's property except through jobsite meetings conducted by the Design Professional and the Owner or as otherwise determined by the Owner.
2. Contractor's personnel shall remain in their designated work areas. Communications with any non-project related persons on or near the site shall be through Project Superintendent.
3. No firearms or other types of weapons, of any sort are allowed on site. If member of the Contractor's workforce is found to be in possession of a firearm, of any kind, they will be directed to leave immediately and will not be allowed to return. This includes firearms found in company or private vehicles, tool boxes, or brought on site in any other manner;
4. Smoking is prohibited on any occupied school campus. Smoking shall be limited to designated areas on a new, or un-occupied, site, if allowed in advance by Owner.
5. There shall be no use, possession, sale, and distribution of alcohol, drugs, or other controlled substances on its premises. The Contractor shall also prohibit the presence of an individual with such substances in their body from the workplace.
6. Any employee who is found in violation of requirements of these restrictions, or of any others within the Contract Documents, or who refuses to permit inspection shall be barred from the Project site at the discretion of the Owner in accordance with Subparagraph 13.8.4.1 of the General Conditions.
7. Comply with Owner's procedures for individual visual identification of Contractor's workforce on school site and in occupied areas. If identification badges are required, make sure that they are worn at all times on site during the work.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 3100

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. General requirements for coordination of Work.
2. Field engineering.
3. Requirements for participation in and administration of:
 - a. Pre-construction conference.
 - b. Progress meetings.
 - c. Pre-installation conferences.
4. Progress schedule.

B. Related documents and sections:

1. Document 00 0700 – General Conditions
 - a. Paragraph 3.10 – Contractor’s Schedules, Logs, Meetings, and Reports
2. Document 00 2113 - Instructions to Bidders: Pre-Bid Conference.
3. Section 01 1000 - Summary: Work by others.
4. Section 01 4000 – Quality Requirements: Coordination with Owner’s project roof observer.
5. Section 01 1500 – Temporary Facilities and Controls

1.2 SUBMITTALS

A. Provide in accordance with Section 01 3300 - Submittal Procedures:

1. Site mobilization plan (See Section 01 1500 and Paragraph 3.13 in Document 00 0700 – General Conditions)..

- a. Submit for Owner's approval prior to start of Work.
 - b. Update as necessary during progress of Work to adjust for changed conditions and as approved by Owner.
2. Coordination drawings:
- b. Provide where coordination is critical for installation of components fabricated off site and where space is limited and maximum utilization of space is required.
 - c. Show relationship and integration of components and construction entities, required installation sequence, dimensions, and tolerances.
- B. Staff assignment list and emergency contact information:
- 1. Prior to Pre-Construction Conference, provide to Design Professional a list of Contractor's principal staff assignments for Project. Indicate names, duties and responsibilities, addresses, emergency contact information and telephone numbers. Include resume of proposed Project Superintendent showing prior experience as superintendent on projects of similar size and scope. Naming more than one Project Superintendent to be in charge depending on which is present at the site will not be acceptable. Design Professional shall be informed in writing prior to any proposed change in Project Superintendent during the progress of the Work. See also Paragraph 3.9 of the General Conditions.
 - 2. Distribute contact information and post in field office coordination.

1.3 GENERAL COORDINATION REQUIREMENTS (See Article 3 in General Conditions).

- A. Scheduling: Coordinate scheduling, submittals and work of various specification sections to ensure efficient and orderly sequence of installation of interdependent construction elements. Ensure that work of one specification section is not installed in such a manner as to limit, preclude, or restrict work of another section.
- B. Coordinate completion and clean-up of work of separate specification sections in preparation for final inspection specified in Section 01 7700 - Closeout Procedures.
- C. After acceptance of Work, coordinate access to facility for required maintenance, monitoring, adjusting, and correcting deficiencies to manner to minimize disruption of Owner's activities.
- D. Coordinate with Owner regarding work of Owner's forces and separate contractors. Ensure coordination of such work with Project Schedule.

- E. Roofing Work Coordination with Owner and Roofing Consultant: Contractor shall notify the PSFA Representative and Owner's Roofing Consultant no later than 24 hours in advance regarding anticipated change in the roofing installation schedule due to prediction of bad weather or by other circumstances, including those directly caused by roof system installer, which will prevent roof system installation in accordance with the current Project Schedule. Lack of adequate communication between Contractor and subcontractor regarding anticipated scheduling shall not relieve Contractor of this requirement. Contractor shall be responsible for reimbursing to the Owner the related cost of Owner's separate contractor services, **including those of the Roofing Consultant** if Contract roofing production rates are not met due to lack of compliance with these requirements. See also Section 01 4000 – Quality Requirements.
- F. HVAC & Control Performance Assurance Contractor (PAC) Coordination: Contractor shall notify the PAC no later than 24 hours in advance regarding anticipated change in the HVAC & Controls installation schedule due to prediction of circumstances, including those directly caused by installer, which will prevent PAC tasks from being performed in accordance with the current Project Schedule. Lack of adequate communication between Contractor and subcontractor regarding anticipated scheduling shall not relieve Contractor of this requirement. Contractor shall be responsible for reimbursing to the Owner the related cost of Owner's separate contractor services, **including those of the PAC** due to lack of compliance with these requirements. Examples of such expenses are separate contractor's repeat trips and overtime made necessary by lack of Contractor's compliance with this subparagraph. See also Section 01 4000 – Quality Requirements.

1.4 FIELD ENGINEERING

- A. Existing control datum for field engineering is indicated on Drawings.
- B. Locate or establish survey control and reference points prior to starting site construction. Protect points during construction and record locations with horizontal and vertical data on Project Record Documents in accordance with Section 01 7800 - Closeout Submittals.
- C. Prior to start of construction, verify location of control points and layout information on Drawings relative to property, setback, and easement lines.
- D. Provide competent field engineering services. Establish elevations, lines, and levels utilizing recognized engineering survey practices. Periodically verify layouts.
- E. Promptly replace dislocated control and reference points based on original survey control.

1.5 PROJECT COMMUNICATIONS SYSTEM (CIMS)

- A. Utilize PSFA – CIMS for project communications. Refer to Document 00 7200 – General Conditions. Subparagraph 4.2.4.3.
- B. Arrange with Owner as necessary to obtain PSFA - CIMS training for Contractor's principal staff on Project.

1.6 PRE-CONSTRUCTION CONFERENCE

- A. Conference will be held after execution of the Agreement and prior to issuance of Notice To Proceed. Time and location will be coordinated with Owner and Design Professional. Meet at the site or other location convenient to all parties.
- B. Attendance: Owner, school principal or other designated school representative, Design Professional, consultants, Contractor, and major subcontractors and suppliers.
- C. Agenda:
 - 1. Distribution of Contract Documents.
 - 2. Designation and description of roles of responsible personnel representing Owner, Contractor, and Design Professional.
 - 3. Status of permits and Notice to Proceed.
 - 4. Site mobilization plan, use of premises by Contractor and Owner, Owner's occupancy requirements, work hours, regular school schedule and special school schedule considerations.
 - 5. Construction schedule, work sequence, and delivery priorities.
 - 6. Weekly job meeting schedule.
 - 7. Owner's right to salvage.
 - 8. Presentation and discussion of site mobilization plan specified in Section 01 50 00 - Temporary Facilities and Controls.
 - 9. Construction facilities, controls, and temporary utilities.
 - 10. Procedures for processing submittals, applications for payment, substitution requests, field decisions and communications, and contract modifications.
 - 11. PSFA - CIMS

12. Wage rates.
13. Security, Contractor's use of keys, safety, first aid, and housekeeping.
14. Behavior of work force on school site.
15. Procedures for spotting of utility lines [by Owner's forces].
16. Procedures for maintaining project record documents.
17. Requirements for start up of equipment.
18. Testing and inspection procedures.
19. Introduce Owner's separate contractors and consultants, [including PAC and roofing observer].
20. Inspection and acceptance of equipment put into service during construction.
21. Contract closeout procedures.
22. Emergency contact information.
23. Other pertinent items.

1.7 PROGRESS MEETINGS

- A. Refer to Document 00 7200 General Conditions – Paragraph 3.10 for requirements.
- B. Progress Meetings shall include review of Owner's separate contractor issues including the PAC Design Issues Log and Installation Issues Log with actions required, those individuals assigned for resolution, and expected resolution date.

1.8 PRE-INSTALLATION CONFERENCES

- A. When required by an individual specification section, convene a pre-installation conference at site.
- B. Require attendance of entities directly concerned with item of work.
- C. Notify Design Professional 4 days in advance of meeting.
- D. Prepare agenda and preside at conference. Record minutes and distribute copies within 3 days to participants and Design Professional.

- E. At meeting, review conditions of installation, preparation and installation procedures, and coordination with related work.

1.9 PROGRESS SCHEDULE

- A. See Paragraph 3.10 in the General Conditions for requirements.

Indicate complete sequence of roofing activity in compliance with roofing production rates required by Contract.

1. Indicate complete sequence of HVAC and controls installation activity as separate line items and testing in compliance with requirements of Owner's Performance Assurance Contractor (PAC). Itemize each category of subcontracted work, especially those related to PAC activities and illustrate separately on the Project Schedule. Consult with PAC to determine milestones, critical paths and time requirements to complete Test and Balance and performance verification testing prior to Owner's occupancy of Project and insert in Project Schedule. See Subparagraph 1.3-F regarding Contractor's responsibility for maintaining PAC involvement in Project Schedule.

PART 2 - PRODUCTS

2.1 EQUIPMENT

- A. Verify utility requirements and characteristics of equipment are compatible with facility utilities. Coordinate work of various specification sections having interdependent requirements for installing, connecting to, and placing in service such equipment.

PART 3 - EXECUTION

3.1 COORDINATION WITH INSTALLED CONSTRUCTION

- A. Cutting and patching of installed construction shall be accomplished in accordance with Section 01 7000 - Execution Requirements.

END OF SECTION

SECTION 01 3300

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes submittal procedures for:

1. Shop drawings.
 2. Product data.
 3. Samples.
 4. Manufacturer's instructions.
 5. Design data and calculations.
 6. Manufacturer's certificates.
 7. Reports for testing, inspecting, and demonstrating.
1. HVAC & controls construction checklists
 2. Equipment inventory and roofing data collection forms.

B. Related documents and sections:

1. Document 00 7200 - General Conditions, [Paragraph 3.12]: Contractor's responsibilities regarding submittals.
2. Section 01 3100 - Project Management and Coordination: Submittal of Progress Schedule and coordination drawings.
3. Section 01 4000 - Quality Requirements: Manufacturers' field services and reports.
2. Section 01 6300 - Product Substitution Procedures: Submittal of substitution requests.
3. Section 01 7800 - Closeout Submittals: Submittal of project record drawings,

operation and maintenance manuals, warranties, certifications of inspection, extra materials, and other closeout submittals.

7. Section 01 7801 – Equipment Inventory and Roofing Data Collection: Collection and submittal of data required by Owner for equipment and roof system(s) installed under the Contract.
8. Section 23 0593 – Testing Adjusting and Balancing: Preparation and submittal of Construction Checklists.
9. Refer to individual specification sections for unique submittal requirements related to a specific product, system, or procedure.

1.2 HVAC & CONTROLS CONSTRUCTION CHECKLISTS

A. Submission:

1. Submit the checklists upon completion of installation and initial operational testing prior to TAB work as required by Division 23.
2. Submit reports as required by Division 23.

B. Form:

1. Use project-specific forms provided by Performance Assurance Contractor. Refer to Section 23 0593 – Testing, Adjusting and Balancing.
2. Bind with titled cover in folder, plastic binder, or three ring binder as appropriate for quantity of material.

C. Reports shall include:

- a. Completion of all required checklist items.
- b. Names of persons performing activity.

1.3 EQUIPMENT INVENTORY AND ROOFING DATA COLLECTION FORMS

A. Submission:

1. Submit completed forms for all categories of equipment and roofing installed under the Contract, and as required in Section 01 7801 – Equipment Inventory and Roofing Data Collection.

2. Submit forms prior to Substantial Completion and as required by Section 01 7801.

B. Form:

1. Use electronic forms as required in Section 01 7801 and provided by PSFA on its web site at www.nmpsfa.org (“Maintenance Portal” page).for each type of equipment to be inventoried.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SUBMITTAL TRANSMITTAL FORM

The undersigned, as Contractor for the above project, submits the following and certifies that submittal has been reviewed and it conforms with requirements of Contract Documents except as noted.

SUBMITTAL NUMBER: _____ RESUBMITTAL: YES NO

DATE: _____ NUMBER OF COPIES SUBMITTED: _____

DESCRIPTION: _____

ASSOCIATED SPECIFICATION SECTION NO: _____

REFERENCED DRAWING SHEET NO: _____

NAME OF SUBCONTRACTOR/SUPPLIER: _____

SUBMITTED
BY: _____ DATE: _____

SIGNATURE: _____

• *****

DATE RECEIVED BY DESIGN PROFESSIONAL: _____

DISTRIBUTED TO:
OWNER CIVIL LANDSCAPE STRUCTURAL MECHANICAL ELECTRICAL
OTHER: _____

ACTION: No exceptions taken [] Notice Regarding This Submittal
Make corrections noted [] Contractor has notified Architect in writing
Revise and resubmit [] of deviations from requirements of the
Rejected [] Contract Documents YES NO

COMMENTS: _____
PA Architects

Submittal review corrections and comments by Design Professional do not relieve Contractor from compliance with Contract Documents. Review is only for general conformance with design concept and general compliance with information given in Contract Documents. Contractor is responsible for verifying dimensions, selecting fabrication processes and techniques of construction, coordination with other trades, and performing work in safe and satisfactory manner.

REVIEWED BY: _____ DATE: _____

SIGNATURE: _____

SECTION 01 4000

QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Installation quality control.
2. Reference standards.
3. Mock-ups.
4. Field samples.
5. Inspection and testing laboratory services.
6. Manufacturer's field services and reports.
7. Owner's roof observation services and reports/
8. Owner's Performance Assurance Contractor's (PAC) services and reports.

B. Related requirements:

1. Document 00 7200 - General Conditions:
 - a. Paragraph 3.3: Contractor's supervision and construction procedures.
 - b. Subparagraph 2.2.4: Owner's responsibilities for testing and inspections.
 - c. Article 12: Contractor's responsibility for uncovering and correction of work.
 - d. Paragraph 13.5: Requirements for tests and inspections.
2. Section 01 3100 – Project Management and Coordination: Requirements for coordination with Owner's separate contractors.

3. Section 01 6000 - Product Requirements: Requirements for material and product quality.
4. Section 23 0593 - Testing, Adjusting, and Balancing: Testing and balancing of HVAC system [to be paid for by Owner.
5. Section 23 0810 – Performance Assurance for HVAC: Contractor’s Submittals; Contractor’s Responsibilities, Testing Preparation, General Testing Requirements; HVAC Systems, Subsystems and Equipment Testing Procedures.

1.2 INSPECTION AND TESTING LABORATORY SERVICES

- A. Unless required otherwise in the Contract, Owner shall appoint, employ, and pay for services of an independent firm to perform routine inspections and compliance for:
 - 1 Test, Adjust, and Balance HVAC system and controls as specified in Section 23 0593 - Testing, Adjusting, and Balancing. TAB services are to be provided by Owner’s separate PAC contractor.
 3. Other materials, components, and systems where routine testing to determine compliance with Contract Documents is required. See Article 2.2 of the General Conditions
- B. Testing firm shall perform inspections, tests, and other services specified in individual specification sections and as required.

1.3 OWNER’S ROOF OBSERVATION SERVICES AND REPORTS

- A. When roof system installation is being performed, the Owner will employ a separate consultant to observe roof conditions, installation, quality of materials and workmanship, and as applicable, to report directly to the Design Professional on roof installation field issues.
- B. Contractor's responsibilities:
 1. Cooperate with roof observer and provide assistance in accessing the areas of roof work and obtaining samples or tests. Provide access to complete field set of Contract Documents and storage for roof observer’s samples and testing equipment.
 2. Submit detailed work schedules for roof installation on a weekly basis to Design

Professional and roof observer for review in advance of, and during roofing work. Promptly notify roof observer and Design Professional regarding proposed or anticipated modifications which may alter schedule as required by Section 01 3100.

3. Notify roof observer in advance regarding any tests or inspections of the roofing system or substrate to be independently performed by other testing services or manufacturer's technical representatives. Allow reasonable opportunity for roof observer to witness such tests or inspections and send to roof observer copies of related reports.

1.4 OWNER'S PERFORMANCE ASSURANCE CONTRACTOR'S (PAC) SERVICES AND REPORTS

A. When HVAC system installation is being performed, the Owner will employ a separate Performance Assurance Contractor (PAC) to observe, test, and report on installation, quality of workmanship, system performance, and as applicable, to report, via the Owner's Representative, to the Design Professional on HVAC installation field deficiencies that may impact completion of performance assurance activities.

B. Contractor's responsibilities:

4. Cooperate with PAC and help in accessing the areas of HVAC and controls work and in performing valid tests. Provide access to complete field set of Contract Documents and storage for PAC's testing equipment.
5. Submit detailed work schedules for HVAC and controls installation as required by the PAC and Design Professional for review in advance of, and during HVAC & controls work. Promptly notify PAC and Design Professional regarding proposed or anticipated modifications which may alter schedule as required by Section 01 3100.
6. Notify PAC and Design Professional in advance regarding any tests or inspections of the HVAC and controls system to be independently performed by other testing services or manufacturer's technical representatives. Allow reasonable opportunity for PAC to witness such tests or inspections and send to PAC copies of related reports.
7. The list of PAC Construction Phase deliverables and the time requirements to complete them shall be obtained by the Contractor from the PAC and shall be included within the Project Schedule. These shall be identified as critical paths with milestones related to the quality assurance checking of the HVAC-R and control systems.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 5000

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Site mobilization plan.
2. Temporary services: Electrical, lighting, heating, ventilating, water, telephone, and facsimile.
3. Fencing, barriers, and other temporary controls.
4. Temporary erosion and sediment controls including NPDES-SWPPP requirements.
5. Construction facilities: Temporary buildings, sanitary facilities, access, and parking.
6. Protection of Work and existing facilities.
7. Project sign.
8. Bulletin board.

B. Related documents and sections:

1. Document 00 7200 - General Conditions:
 - a. Paragraph 3.13: Contractor's use of site..
 - b. Paragraph 3.15: Contractor's responsibility for cleaning.
 - c. Article 10: Safety precautions and programs.
2. Section 01 3100: Project Management and Coordination
2. Section 01 7000 - Execution Requirements: Progress cleaning.

1.2 REFERENCES

- A. NFPA 10 - Standard for Portable Fire Extinguishers.
- B. NFPA 241 - Safeguarding Building Construction, Alterations, and Demolition Operations.

1.3 SITE MOBILIZATION PLAN

- A. Coordinate locations for temporary facilities with Design Professional and Owner.
- B. Based upon information indicated on Drawings, prepare site mobilization plan in accordance with requirements for site logistics plan in Subparagraph 3.13.14 in Document 00 7200 General Conditions.
- C. Present 3 copies of plan at Pre-Construction Conference in accordance with Section 01 3100 - Project Management and Coordination.
- D. Prior to mobilization, revise and resubmit to Design Professional site mobilization plan incorporating final revisions made at Pre-Construction Conference and approved by Design Professional and Owner.

1.4 TEMPORARY ELECTRICITY

- A. Provide and pay for temporary electricity used during construction. Provide service disconnect and overcurrent protection. Provide temporary feeder as required.
- B. Connect to existing power source at site. Provide service disconnect and overcurrent protection. Provide temporary feeder as required. Provide separate metering and reimburse Owner for cost of energy used.
- C. Provide power outlets for construction operations with branch wiring, distribution boxes, and flexible power cords as required.
- D. Permanent convenience receptacles may be utilized during construction.

1.5 TEMPORARY LIGHTING

- A. Provide lighting for construction operations in accordance with Paragraph 3.13 in the General Conditions. Lighting levels shall be appropriate for type and difficulty of work. Use these minimums as guidelines:
- B. After dark, provide security lighting for interior and exterior work and storage areas.
- C. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.

- D. Maintain lighting and provide routine repairs.
- E. Permanent building lighting may be utilized during construction. Document existing lighting system conditions at start of Work and submit report to Design Professional for approval before Work begins. Re-lamp, replace, or repair existing fixtures at end of job to return lighting to conditions documented prior to commencement of Work.

1.6 TEMPORARY HEATING AND VENTILATING

- A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, and gases.
- B. Provide temporary fan units to maintain clean air for construction operations.
- C. Maintain minimum ambient temperature of 50 degrees F in interior areas where construction is in progress.

1.7 TEMPORARY WATER SERVICE

- A. Provide, maintain, and pay for suitable quality water service required for construction operations.

1.8 COMMUNICATIONS

- A. Provide, maintain, and pay for telephone service to field office. School telephones will not be available to Contractor's workforce unless for an emergency.
- B. Provide, maintain, and pay for facsimile service to field office.

1.9 FENCING

- A. Provide temporary fencing around new building and materials storage site. Completely separate construction from existing facilities, student pathways and related exterior areas.
- B. Type: Panelized 6 foot high commercial grade chain link fence. Equip with vehicular and pedestrian gates with locks.

1.10 BARRIERS AND PROTECTION

- A. Security: Provide to protect Work from unauthorized entry, vandalism, and theft. Coordinate with Owner's security program and personnel.
- B. Barriers: Provide to prevent unauthorized entry to construction areas and to protect

existing facilities and adjacent properties from construction operations.

- C. Barricades and covered walkways: As required by Design Professional, Owner and governing authorities for safe public access to existing buildings.
- D. Enclosures: Provide temporary, insulated, weather tight closures of exterior openings to provide acceptable working conditions, protect Work, and prevent unauthorized entry. Fit with lockable doors.
- E. NOT USED.
- F. Emergency exits shall be maintained during construction. Provide separate barriers as appropriate.
- G. Protect existing detection devices such as smoke detectors and sensors from construction dust.
- H. Protect existing trees and plants designated to remain. Replace damaged plant material.
- I. Hand-water existing trees, plants [and grass] as necessary to maintain them viable in the event that existing irrigation system is made temporarily inoperable due to the Work. Replace dead plant material as required in the event of failure to comply with this provision.

1.11 PROTECTION OF EXISTING AND INSTALLED WORK

- A. Protect installed Work. Control activity in immediate work area.
- B. Provide temporary and removable protection for installed products.
- C. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, and movement of heavy objects with durable sheet materials.
- D. Prohibit traffic and storage on roof surfaces and landscaped areas.

1.12 TEMPORARY FIRE PROTECTION

- A. Install and maintain temporary fire protection components. Establish and follow procedures to protect against fire losses. Comply with NFPA 241.
- B. Fire extinguishers: Provide hand carried, portable, UL rated fire extinguishers of type and size recommended by NFPA 10 for building exposure conditions. Place in accessible, convenient locations in clear view with a minimum of one extinguisher per

floor.

- C. Access: Maintain unobstructed access to fire hydrants, water supply, fire extinguishers, stairways, and access routes for fighting fires.
- D. Heating devices: Exercise care and monitor use of temporary heaters to minimize fire risk.
- E. Store combustible materials in fire-safe containers.
- F. Volatile products: Do not store paints, varnishes, paint removers, solvents, adhesives, cleaning rags, and other volatile products in building. Take precautionary measures to prevent fire hazards and spontaneous combustion.
- G. Cutting and welding: Approve in advance use of open flame cutting, welding, and soldering equipment. Ensure that safe conditions exist before granting approval.

1.13 TEMPORARY EROSION AND SEDIMENT CONTROLS

- A. Prevent temporary collection of sediment on sidewalks, parking lots, streets and driveways. Clean such surfaces promptly if such conditions exist due to the Work.
- B. National Pollution Discharge Elimination System (NPDES) permit and procedures for preparing a Storm Water Pollution Prevention Plan (SWPPP).
 - 1. Contractor shall determine whether Project requires an EPA NPDES storm water discharge permit in conformance with all regulations governing the disturbance of construction site areas.
 - 2. If storm water discharge permit is required, then both Contractor and Owner shall be designated as separate permittees, and the Contractor shall do the following:
 - a. Prepare a Storm Water Pollution Prevention Plan (SWPPP) document as necessary to ensure compliance with any and all NPDES construction storm water permitting plan requirements.
 - b. Prepare and submit all EPA documentation and forms required of Contractor for permit.
 - c. Assist Owner with preparation and submittal of all EPA documentation and forms specifically required of Owner for permit. Provide all required project-related information to Owner as necessary.
 - d. At Final Completion of Project, Contractor shall complete and submit documentation to EPA as required and to Design Professional as part of

Project Closeout documentation package. See Section 01 78 00 of Specifications.

3. If a storm water discharge permit is not required, then the Contractor shall submit to the Design Professional and Owner prior to mobilization a signed statement containing specific written justification why such permit is not required on the Project.
4. The Contractor shall manage the discharge of storm water from the site in accordance with NPDES permit and the provisions of the SWPPP. The Contractor shall be responsible for installing and maintaining any necessary storm water control measures in accordance with control device manufacturer's recommendations and the provisions of the SWPPP. The Contractor shall monitor the suitability of the designated control measures and management practices to achieve the storm water quality provisions of the NPDES permit, and shall make any necessary changes to the controls and practices in order to meet the permit requirements. The Contractor shall be responsible for updating the SWPPP and maintaining all records related to the SWPPP. A copy of the approved SWPPP shall be kept on the jobsite at all times. Contractor shall be liable for all fines and construction delays resulting from any governmental agency enforcement action due to failure by the Contractor to satisfy the above requirements.
5. Contractor is responsible for payment of all applicable fees and permits related to SWPPP approval process and for full cost of control measures for the Project.

1.14 ACCESS

- A. Refer to Drawings for location of acceptable access routes and site entrances. Protect existing curbs and walks traversed by construction vehicles from damage.
- B. Identify access to Contractor's work and office area with appropriate signs so that delivery personnel and others may contact Contractor. School office shall not be used as destination for Contractor's deliveries.
- C. Prevent unauthorized personnel from accessing school building or site through Contractor's work area.

1.15 FIELD FACILITIES

- A. [Provide and maintain a weathertight, fully equipped field office.] [Provide work station for use of Design Professional during field inspections.]
- B. Provide space for project meetings with table and chairs to accommodate 6 persons.

- C. Provide and maintain storage sheds and other facilities as required.
- D. Arrange for parking for work force in manner approved by Owner. [Do not limit Owner's requirements for parking.]

1.16 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required sanitary facilities for work force.
- B. New [and existing] toilet facilities shall not be used by work force.

1.17 DRINKING WATER

- A. Provide independent source of drinking water for workforce. School drinking fountains shall not be routinely available for Contractor's use.

1.18 PROJECT SIGNS

- A. PSFA Construction Sign. See Section 01 5001.
 - 1. Furnish project sign and erect on site at location designated by Design Professional.
 - 2. Construction: 4 by 5 feet constructed of 3/4 inch exterior plywood bolted to 4 by 4 inches treated wood posts.
 - 3. Sign shall be prepared by professional sign painter using either painted exhibit lettering or die cut adhesive applied letters.
 - 4. Design, style and proportional sizes of lettering, color, and text shall be as shown in Section 01 5001.
 - 5. PSFA sign will be required if there is PSCOC funding in Project. Allow no other signs to be displayed without approval of Design Professional or as required by the Owner.

1.18 BULLETIN BOARD

- A. Furnish and maintain bulletin board adjacent to field office. Display the following throughout construction period:
 - 2. State wage rates.
 - 3. Safety requirements.

4. Official notices and announcements.

1.19 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary above grade and buried utilities, equipment, facilities, and excess materials prior to final inspection.
- B. Clean and repair damage caused by installation of temporary facilities.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

[(PROJECT SIGN DRAWINGS FOLLOW)]

SECTION 01 6300

PRODUCT SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for product options and substitution procedures.
- B. Related documents and sections:
 - 1. Section 00 7200 General Conditions:
 - a. Paragraph 3.4 – Labor and Materials

1.2 PRODUCTS AND ENERGY PERFORMANCE

- A. This Project is NOT designated to receive an EPA ENERGY STAR rating.

1.3 SUBSTITUTIONS

- A. During bidding, Design Professional will consider written requests from qualified bidders, subcontractors, and manufacturers for substitutions.
 - 2. Submit separate request for each substitution with Form 01 6301 - Prior Approval Substitution Request Form. Copy of form follows this Section.
 - 3. Submit substitution request in accordance with procedures and time limitations stated in Document 00 2113 - Instructions to Bidders.
 - 4. Substitutions approved during bidding will be listed in Addenda.
- B. After Contract award:
 - 1. After signing of Agreement Between Owner and Contractor, Design Professional will consider written requests for substitutions in accordance with Subparagraph 3.4.2 of the General Conditions.
 - 2. Submit separate request for each substitution with Form 01 6302 - Contractor Substitution Request Form. Copy of form follows this Section. Provide data documenting need for substitution and substantiating compliance of proposed product with Contract Documents. Include proposed changes to contract amount

and time if substitution is accepted.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION - FORMS FOLLOW

PRIOR APPROVAL SUBSTITUTION REQUEST FORM

The undersigned, qualified bidder, subcontractor, manufacturer, or supplier requests that the following product be accepted for use in the Project

PRODUCT: _____

MODEL NO.: _____

MANUFACTURER: _____

ADDRESS: _____

The above product would be used in lieu of

PRODUCT: _____

specified in

SECTION: _____

PARAGRAPH: _____

Attached are the following circled items:

1. Product description including specifications, performance and test data, and applicable reference standards.
2. Drawings.
3. Photographs.
4. Samples.
5. Tabulated comparison with specified product.
6. For items requiring color selections, full range of manufacturer's color samples.
7. Other: _____

The undersigned certifies that the following statements are correct. Explanations for all items

which are **not** true are attached.

1. Proposed substitution has been thoroughly investigated and function, appearance, and quality meet or exceed that of specified product. TRUE FALSE
2. Same warranty will be provided for substitution as for specified product. TRUE FALSE
3. **No** aspect of Project will require re-design. TRUE FALSE
4. Use of substitution will **not** adversely affect:
 - a. Dimensions shown on Drawings. TRUE FALSE
 - b. Construction schedule and date of completion. TRUE FALSE
 - c. Work of other trades. TRUE FALSE
5. Maintenance service and replacement parts for proposed substitution will be readily available in [Las Cruces] [El Paso] [Roswell] [Albuquerque] [Southern New Mexico] [Northern New Mexico] [] area. TRUE FALSE
6. Proposed substitution does **not** contain asbestos in any form. TRUE FALSE

Submitted By:

COMPANY: _____

ADDRESS: _____

TELEPHONE NUMBER: _____

NAME OF PERSON SUBMITTING REQUEST: _____

TITLE: _____

DATE: _____

CONTRACTOR SUBSTITUTION REQUEST FORM

The undersigned, as Contractor for the above Project, requests that the following product be accepted for use in the Project

PRODUCT: _____

MODEL NO.: _____

MANUFACTURER: _____

ADDRESS: _____

The above product would be used in lieu of

PRODUCT: _____

specified in

SECTION: _____

PARAGRAPH: _____

Reason for substitution request: _____

Attached are the following circled items:

1. Product description including specifications, performance and test data, and applicable reference standards.
2. Drawings.
3. Photographs.
4. Samples.
5. Tabulated comparison with specified product.
6. For items requiring color selections, full range of manufacturer's color samples.
7. Documentation of reason for request.
8. Cost data for comparing proposed substitution with specified product.

9. Other: _____

The undersigned certifies that the following statements are correct. Explanations for all items which are **not** true are attached.

- | | |
|--|------------|
| 1. Proposed substitution has been thoroughly investigated and function, appearance, and quality meet or exceed that of specified product. | TRUE FALSE |
| 2. Same warranty will be provided for substitution as for specified product. | TRUE FALSE |
| 3. No aspect of Project will require re-design. | TRUE FALSE |
| 4. Use of substitution will not adversely affect: | |
| a. Dimensions shown on Drawings. | TRUE FALSE |
| b. Construction schedule and date of completion. | TRUE FALSE |
| c. Work of other trades. | TRUE FALSE |
| 5. Maintenance service and replacement parts for proposed substitution will be readily available in [Las Cruces] [El Paso] [Roswell] [Albuquerque] [Southern New Mexico] [Northern New Mexico] [_____] area. | TRUE FALSE |
| 6. Proposed substitution does not contain asbestos in any form. | TRUE FALSE |
| 7. All changes to Contract Sum related to use of proposed substitution are included in price listed below. Contractor waives claims for additional costs related to acceptance of substitution which may subsequently become apparent. | TRUE FALSE |
| 8. Costs of modifying project design caused by use of proposed substitution which subsequently become apparent will be paid for by Contractor. | TRUE FALSE |

If substitution request is accepted:

Contract Sum will be [decreased] [increased] by \$ _____

Contract Time will be [decreased] [increased] by _____ calendar days.

Submitted By:

CONTRACTOR: _____

ADDRESS: _____

TELEPHONE NUMBER: _____

NAME OF PERSON SUBMITTING REQUEST: _____

TITLE: _____

DATE: _____

SECTION 01 7000

EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Basic requirements for examination, preparation and installation.
2. Requirements and limitations for cutting and patching incidental to work, including excavation and backfilling, and as required making several parts fit together.
3. Progress cleaning.

B. Related documents and sections:

1. General Conditions:
 - a. Paragraph 3.13: Contractor's responsibilities regarding use of the site..
 - b. Paragraph 3.14: Contractor's responsibilities regarding cutting and patching operations.
 - c. Article 12: Uncovering and correction of work.
2. Section 01 5000 - Temporary Facilities and Controls: Temporary barriers and enclosures.
3. Section 01 7700 - Closeout Procedures: Final cleaning.

1.2 LOCATION OF UNDERGROUND UTILITIES

- A. The Contractor shall arrange for all spotting of lines by utility companies in advance of any excavation work.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Patching and replacement materials: Those used for original installation.

- B. Product substitutions: For any proposed change in patching materials, submit request for substitution in accordance with Section 01 6300 - Product Substitution Procedures.

PART 3 - EXECUTION

3.1 ROOF PENETRATIONS

A. New roofing:

1. Coordinate, locate and schedule roof penetrations prior to installation of new roof system.
2. Coordinate roof penetrations such that installation does not void roof warranty.]

END OF SECTION

SECTION 01 7500

STARTING AND ADJUSTING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes General procedures for starting, monitoring, and adjusting items of equipment and complete systems.
- B. Related sections:
 - 1. Section 01 3300 – Submittal Procedures: HVAC & Controls Construction Checklists .
 - 2. Section 01 7800 - Closeout Submittals: Operation and maintenance manuals
 - 3. Section 23 0593 - Testing, Adjusting, and Balancing: Balancing of HVAC system.
 - 4. Section 23 0810 Performance Assurance for HVAC: Contractor's Submittals; Contractor's Responsibilities, Testing Preparation, General Testing Requirements; HVAC Systems, Subsystems & Equipment Testing Procedures.

PART 2- PRODUCTS

Not used.

PART 3 - EXECUTION

3.1 STARTING OF SYSTEMS

- A. Submit written Construction Checklists in accordance with Section 01 3300 - Submittal Procedures that equipment and systems have been properly installed and are functioning correctly.

END OF SECTION

SECTION 01 7700

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Closeout procedures.
2. Final cleaning.
3. Final inspection.
4. Inspection held immediately prior to end of one year correction period.

B. Related documents and sections:

1. Document 00 7200 - General Conditions of the Contract,
 - a. Paragraph 9.8: Substantial Completion.
 - b. Paragraph 9.9: Partial occupancy.
 - c. Paragraph 9.10: Closeout Requirements
 - d. Paragraph 9.11: Final completion and final payment.
 - e. Subparagraph 12.2.2.1: One year correction period for Contractor to correct defective work.
 - f. Paragraph 3.13: Use of site.
2. Section 01 7000 - Execution Requirements: Progress cleaning.
3. Section 01 7500 – Starting and Adjusting: Starting and adjusting items of equipment and complete systems.
4. Section 01 7800 - Closeout Submittals: Submittal of project record documents, operation and maintenance manuals, warranties, certificates of inspection, extra materials, and keys.

5. Section 01 7900 – Demonstration and Training: Demonstrations and training for Owner's personnel.

1.2 SUBSTANTIAL COMPLETION PROCEDURES

- A. Prior to or in conjunction with submission of Contractor's request for Substantial Completion, submit the items specified in Section 01 7800 - Closeout Procedures:
- B. Comply with Document 00 7200 - General Conditions of the Contract, Paragraph 9.8 for issuance of Certificate of Substantial Completion.

1.3 FINAL COMPLETION PROCEDURES

- A. Follow procedures as outlined in Article 9 of the General Conditions.

1.4 FINAL CLEANING

- A. Execute final cleaning prior to final inspection by methods and with materials and equipment suitable for commercial/institutional building maintenance. See Paragraph 3.13 – General Conditions.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01 7800

CLOSEOUT SUBMITTALS

PART 1 – GENERAL

1.1 SUMMARY

- A. Section includes procedures for preparing and submitting closeout submittals:
 - 1. Project Record Documents.
 - 2. Operation and maintenance manuals and data.
 - 3. Warranties.
 - 4. Insurance information.
 - 5. Certificates of inspection and compliance.
 - 6. Maintenance tools.
 - 7. Extra materials.
 - 8. Keys.
- B. Related documents and sections:
 - 1. Document 00 7200 - General Conditions of the Contract:
 - a. Paragraph 3.5: Contractor's warranty that Work is of good quality and free from defects and conforms to Contract Documents.
 - b. Subparagraph 9.9.1: Commencement of warranties and correction period.
 - c. Subparagraph 9.10.1: Closeout requirements
 - d. Paragraph 9.11: Affidavits and Certificates required before Final Payment
 - e. Subparagraph 12.2.2.1: One year correction period for Contractor to correct defective work.

2. Section 01 3300 - Submittal Procedures: Submittal of shop drawings, product data, samples, installation instruction, reports and other submittals during construction prior to closeout.
- 3 Section 01 7500 – Starting and Adjusting: Starting and adjusting items of equipment and complete systems.
- 4 Section 01 7500 – Starting and Adjusting: Starting and adjusting items of equipment and complete systems.
- 5 Section 01 7700 – Closeout Procedures: Requirements for achieving Substantial Completion and Final Completion.
- 6 Section 01 7801 – Equipment Inventory and Roofing Data Collection: Requirements for completing equipment inventory and roofing data submittals.
- 7 Section 01 9310 – 3-Year Extended Service & Maintenance: Directory of service personnel and contact information for Owner’s reference; and fully-executed copy of 3-year extended warranty.

1.2 OPERATION AND MAINTENANCE DATA

A. Provide operation and maintenance data for:

1. Landscaping specified in Sections 32 8000 - Irrigation System and 32 9000 - Planting.
2. NOT USED.
3. Motorized doors specified in Section 08 3300 - Coiling Doors and Grilles.
4. Operable partitions specified in Section 10 2226 - Operable Partitions.
5. Food service equipment specified in Section 11 4000 - Food Service Equipment.
6. Folding basketball backstops and gymnasium dividers specified in Section 11 6500 – Athletic & Recreational Equipment.
7. NOT USED.

8. NOT USED.
 9. NOT USED.
 10. Mechanical equipment, systems, and controls specified in Divisions 21, 22, and 23.
 11. Integrated automatic controls specified in Division 25.
 12. Electrical equipment, systems, and controls specified in Division 26, 27, and 28.
 13. Other equipment and systems for which operation and maintenance data is requested in individual specification sections.
- B. Provide written sequence of operations for each automated building system, including those related to the following:
2. Life safety system(s).
 3. Electrical system(s).
 3. Mechanical system(s).
 4. Other automated building systems and components.
- C. Submission:
1. Submit data to Design Professional in one or more binders.
 2. Submit for review one draft copy 30 days prior to need date or as otherwise specified. This copy will be returned after review with Design Professional's comments. Revise content as required.
 3. Once approved, submit copies of final operation and maintenance manuals as follows:
 - c. 1 hard copy and one (1) electronic disk of entire manual to District.
 - b. One (1) electronic disk of entire manual to PSFA.
 4. All manuals shall be submitted prior to or in conjunction with Contractor's request for Substantial Completion and prior to demonstration and training session.

D. Contents:

1. Appropriate design criteria.
2. Equipment parts list.
3. Equipment inventory data (on Owner-provided electronic forms) and parts lists.
4. Roofing data (on Owner-provided electronic forms).
5. Operating instructions.
6. Maintenance instruction for equipment and finishes.
7. Shop drawings and product data.
8. Written sequence of operations for each automated building system [including those related to the following:]
 - a. Life safety system(s).
 - b. Electrical system(s).
 - c. Mechanical system(s).
9. Testing, balancing, and other field quality reports.
 10. Copies of warranties.
 11. Directory listings
 12. Other material and information as indicated in individual specification sections and as necessary for operation and maintenance by Owner's personnel.

E. Form:

1. Hard copies of manuals shall be 8-1/2 x 11 inch text pages bound in three ring expansion binders with a hard durable plastic cover. All documents to be originals unless otherwise noted.
2. Prepare binder covers with printed subject title of manual, title of project, date, and volume number when multiple binders are required. Printing shall be on face

and spine.

3. Internally subdivide the binder contents with divider sheets with typed tab titles under reinforced plastic tabs. Place dividers at beginning of each chapter, part, section, and appendix.
4. Provide a table of contents for each volume.
5. Provide directory listing as appropriate with names addresses, and telephone numbers of Design Professional, Contractor, subcontractors, equipment suppliers, and nearest service representatives. Provide emergency 24-hour service contact information for all subcontractors, service contractors and principal vendors.
6. Provide electronic data disk(s) with each manual including all data required to be submitted electronically. Include hard copy with each manual.

1.3 WARRANTIES

- A. Provide duplicate notarized copies of special and extended warranties as required by individual specifications sections.
- B. Submit warranties to Design Professional prior to or in conjunction with submission of Notice of Substantial Completion.
- C. Execute and assemble warranties from subcontractors, suppliers, and manufacturers.
- D. Provide Table of Contents and assemble in three ring binder with a hard durable plastic cover. Internally subdivide the binder contents with permanent page dividers, with tab titling clearly typed under reinforced laminated plastic tabs.
- E. For items of work delayed beyond date of Substantial Completion, provide updated warranty submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

1.4 CERTIFICATES OF INSPECTION AND COMPLIANCE

- A. For inspections throughout the construction period required by regulatory agencies, obtain and maintain certificates issued to show compliance.
- B. Assemble certificates and any formal written evidence of regulatory compliance in three ring binder with table of contents and submit to Design Professional prior to or in conjunction with submission of Notice of Substantial Completion.

- C. Certificate of Occupancy: Prior to Substantial Completion, obtain from authorities having jurisdiction Certificate of Occupancy. Submit with Notice for Substantial Completion.

1.5 INSURANCE INFORMATION

- A. Submit prior to or in conjunction with submission of Contractor's request for Substantial Completion information regarding insurance including change over requirements and insurance extensions.

1.6 MAINTENANCE TOOLS

- A. Provide any hardware and software tools (including software keys) that are proprietary to the mechanical systems and that may be necessary for service during their lifecycle.
- B. Tools shall be as provided or recommended by manufacturers of installed equipment and systems. Types and sizes shall be as specifically required for installed products.
- C. Tools shall be available and their use demonstrated during training sessions specified in Section 01 75 00 - Starting, Adjusting, and Demonstrating.
- D. Prior to, or concurrent with Contractor's request for Substantial Completion, deliver maintenance tools to Owner's representative. Prepare inventory of tools provided and obtain receipt from Owner's representative.

1.7 EXTRA MATERIALS

- A. Provide spare parts and maintenance materials in quantities specified in individual sections.
- B. Extra materials shall be produced by the same manufacturer of and compatible with the installed products.
- C. Prior to or concurrent with submission of Notice of Substantial Completion deliver extra materials in unopened containers to Owner's representative at designated storage area at project site and place in location as directed. Obtain receipt from Owner's representative.
- D. During one year correction period:
 - 1. Extra materials may be used by Contractor to replace expendable and normally

worn parts.

2. Extra materials used by Contractor for replacement of defective products shall be replaced at no additional cost to Owner.

1.8 KEYS

- A. Prior to or in conjunction with submission of Contractor's request for Substantial Completion, provide Owner with all keys for:
 1. Door hardware locks after re-keying in accordance with Section 08 71 00 - Door Hardware.
 2. Access doors and panels.
 3. Electrical panel boards and other equipment.
- B. Provide a minimum of two keys for each lock.
- C. Clearly label each key as to function and location of lock.
- D. Obtain receipt from Owner's representative.
- E. Prior to, or in conjunction with Final Completion, return all keys lent out by Owner to Contractor for access to existing spaces, gates, etc. for the Work. Obtain receipt from Owner.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01 7801

EQUIPMENT INVENTORY AND ROOFING DATA COLLECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes requirements for completion and submittal of forms including an inventory listing and detailed data pertaining to any serial numbered components or equipment furnished and installed under the Contract, that may require maintenance or repair during the life cycle of the facility.
- B. Related documents and sections:
 - 1. Document 00 7200 - General Conditions,
 - a. Article 3.12: Contractor's responsibilities regarding submittals.
 - b. Article 9.10: Project closeout and use of CIMS.
 - 2. Section 01 3300 – Submittal Procedures: Submittal requirements.
 - 3. Section 01 7800 - Closeout Submittals: Submittal of project record drawings, operation and maintenance manuals, warranties, certifications of inspection, extra materials and other closeout submittals.

1.2 FORMS

- A. PSFA guidelines and Excel spreadsheet forms are available to the Contractor for equipment data collection necessary for importing into a computerized maintenance management system. The following documents for completion electronically by Contractor are available on the **PSFA website (“Maintenance Portal”)** at www.nmpsfa.org. :
 - 1. Equipment Data Collection Form and Guidelines.
 - 2. Roof Data Collection Form and Guidelines.

1.3 PROCEDURES

- A. The equipment data collection forms are to be filled out by the Contractor and

submitted prior to, or in conjunction with Contractor's request for Substantial Completion as required by Section 01_7700 and Section 01_7800.

- B. One electronic compact data disk containing completed forms shall be included in each Operations & Maintenance manual.
- C. The equipment data collection forms shall also be utilized by the 3-Year Extended Service & Maintenance Contractor for the purpose of listing all equipment covered under that agreement as required by Section 01_9311.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 7900

DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Training of Owner's designated personnel in operation and maintenance of equipment and systems.

B. Related sections:

1. Section 01 7800 - Closeout Submittals: Operation and maintenance manuals.

1.2 SUBMITTALS

A. Provide in accordance with Section 01 3300 - Submittal Procedures:

1. List of names, resumes, and qualifications of personnel conducting training sessions.
2. Preliminary schedule listing times, dates, and outline showing organization and proposed contents of training sessions for approval by Design Professional and Owner.
3. Copies of training manuals and other materials to be used in training sessions for approval by Design Professional and Owner.
4. Provide Owner additional copy of audio visual material on the same media used in training sessions.
5. 3 copies of training manuals for future use in training by Owner.
6. Submit report within 1 week after completion of training that sessions have been satisfactorily completed. Give times, dates, list of persons trained, and summary of instructions.

1.3 QUALITY ASSURANCE

A. Personnel conducting demonstration and training sessions shall be knowledgeable of installation, operation, sequence of operations, and maintenance of specific project equipment and systems. Where appropriate manufacturer's representatives shall conduct training.

PART 2- PRODUCTS

2.1 TRAINING MATERIALS

A. Training manuals: Loose leaf notebook format with agenda and objectives of each lesson.

1. Manuals shall describe function, operation, sequence of operations, and maintenance of various items of equipment and be suitable for personnel with high school education.
2. Manuals shall be suitable for future training of Owner personnel by Owner staff.
3. Manuals shall useful reference for staff maintaining facility.

B. Visual aids: Provide charts, handouts, overhead projector slides, electronic presentations, and other visual aids required to make effective presentation and facilitate training.

1. Equipment needed for showing visual training aids shall be provided by Contractor.
2. Visual aids shall be suitable for use by Owner's staff to train additional personnel in the future.

PART 3 - EXECUTION

2.1 SCHEDULING

A. Schedule demonstration and training sessions after equipment and systems have been completely installed, startup completed, and adjustments made. Single demonstration and training session shall be conducted of all items prior to substantial completion. Schedule with Design Professional to accommodate Owner's representatives.

2.2 DEMONSTRATION AND TRAINING

A. Provide demonstration and training session to emphasize operation, sequence of operations, use, and maintenance of installed items and systems:

1. NOT USED.
2. Motorized doors specified in Section 08 3300 - Coiling Doors and Grilles. Section 08 3313 - Overhead Sectional Doors.
3. Operable partitions specified in Section 10 2226 - Operable Partitions.
4. Motorized projection screens and projector mounts specified in Section 11 5200 - Audio-Visual Equipment.
5. Food service equipment specified in Section 11 4000 - Food Service Equipment.

6. Folding basketball backstops and gymnasium dividers specified in Section 11 6500 - Athletic & Recreational Equipment.
 7. NOT USED.
 8. NOT USED.
 9. NOT USED.
 10. Mechanical systems specified in Divisions 21, 22 and 23.
 11. Integrated Automated Controls specified in Division 25.
 12. Electrical systems specified in Division 26, 27 and 28.
 13. Other items and systems as designated by Design Professional or requested by Owner.
- B. Conduct at project site using actual installed equipment and systems.
- C. Owner shall be responsible for designating and notifying personnel to attend and ensuring attendance at scheduled sessions.
- D. Have copies of operation and maintenance manuals specified in Section 01 7800 - Closeout Submittals available. Use as training aids. Include training on each of written sequence of operations contained in the Operations & Maintenance Manual.
- E. Owner shall have right to record or video tape demonstration and training sessions.

END OF SECTION

SECTION 03 20 00 - CONCRETE REINFORCING

1.1 SUMMARY

A. Section Includes:

1. Steel reinforcement bars.
2. Welded-wire reinforcement.
3. Review the following:
 - a. Special inspection and testing and inspecting agency procedures for field quality control.
 - b. Construction contraction and isolation joints.
 - c. Steel-reinforcement installation.

1.2 ACTION SUBMITTALS

A. Product Data: For the following:

1. Each type of steel reinforcement.
2. Zinc repair material.
3. Bar supports.
4. Mechanical splice couplers.
5. Structural thermal break insulated connection system.

B. Shop Drawings: Comply with ACI SP-066:

1. Include placing drawings that detail fabrication, bending, and placement.
2. Include bar sizes, lengths, materials, grades, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, location of splices, lengths of lap splices, details of mechanical splice couplers, details of welding splices, tie spacing, hoop spacing, and supports for concrete reinforcement.
3. For structural thermal break insulated connection system, indicate general configuration, insulation dimensions, tension bars, compression pads, shear bars, and dimensions.

C. Construction Joint Layout: Indicate proposed construction joints required to build the structure.

1. Location of construction joints is subject to approval of Architect.

D. Delegated Design Submittal: For structural thermal break insulated connection system, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.3 INFORMATIONAL SUBMITTALS

A. Welding certificates.

1. Reinforcement To Be Welded: Welding procedure specification in accordance with AWS D1.4/D1.4M.
- B. Material Test Reports: For the following, from a qualified testing agency:
 1. Steel Reinforcement:
 - a. For reinforcement to be welded, mill test analysis for chemical composition and carbon equivalent of the steel in accordance with ASTM A706/A706M.
 2. Mechanical splice couplers.
- C. Field quality-control reports.
- D. Minutes of preinstallation conference.

1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.
- B. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.4/D 1.4M.
- C. Mockups: Reinforcing for cast-concrete formed surfaces, to demonstrate tolerances and standard of workmanship.
 1. Build panel approximately 100 sq. ft. for formed surface in the location indicated on Drawings or, if not indicated, as directed by Architect.
 2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.
 1. Store reinforcement to avoid contact with earth.

PART 2 - PRODUCTS

2.1 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A615/A615M, Grade 60, deformed.

2.2 REINFORCEMENT ACCESSORIES

- A. Joint Dowel Bars: ASTM A615/A615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.
- B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place.
 - 1. Manufacture bar supports from steel wire, plastic, or precast concrete in accordance with CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
 - a. For concrete surfaces exposed to view, where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire, all-plastic bar supports, or CRSI Class 2 stainless steel bar supports.
- C. Steel Tie Wire: ASTM A1064/A1064M, annealed steel, not less than 0.0508 inch in diameter.
 - 1. Finish: Plain.
- D. Stainless Steel Tie Wire: ASTM A1022/A1022M, not less than 0.0508 inch in diameter.

2.3 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protection of In-Place Conditions:
 - 1. Do not cut or puncture vapor retarder.
 - 2. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

3.2 INSTALLATION OF STEEL REINFORCEMENT

- A. Comply with CRSI's "Manual of Standard Practice" for placing and supporting reinforcement.
- B. Accurately position, support, and secure reinforcement against displacement.
 - 1. Locate and support reinforcement with bar supports to maintain minimum concrete cover.
 - 2. Do not tack weld crossing reinforcing bars.
- C. Preserve clearance between bars of not less than 1 inch, not less than one bar diameter, or not less than 1-1/3 times size of large aggregate, whichever is greater.

- D. Provide concrete coverage in accordance with ACI 318.
- E. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- F. Splices: Lap splices as indicated on Drawings.
 - 1. Bars indicated to be continuous, and all vertical bars to be lapped not less than 36 bar diameters at splices, or 24 inches, whichever is greater.
 - 2. Stagger splices in accordance with ACI 318.
 - 3. Mechanical Splice Couplers: Install in accordance with manufacturer's instructions.

3.3 JOINTS

- A. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
 - 1. Place joints perpendicular to main reinforcement.
 - 2. Continue reinforcement across construction joints unless otherwise indicated.
 - 3. Do not continue reinforcement through sides of strip placements of floors and slabs.
- B. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length, to prevent concrete bonding to one side of joint.

3.4 INSTALLATION TOLERANCES

- A. Comply with ACI 117.

3.5 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Testing Agency: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.
- C. Inspections:
 - 1. Steel-reinforcement placement.
 - 2. Steel-reinforcement mechanical splice couplers.
 - 3. Steel-reinforcement welding.
- D. Manufacturer's Inspections: Engage manufacturer of structural thermal break insulated connection system to inspect completed installations prior to placement of concrete, and to provide written report that installation complies with manufacturer's written instructions.

END OF SECTION 03 20 00

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Concrete standards.
2. Concrete materials.
3. Admixtures.
4. Vapor retarders.
5. Floor and slab treatments.
6. Liquid floor treatments.
7. Curing materials.
8. Accessories.
9. Repair materials.
10. Concrete mixture materials.
11. Concrete mixture class types.
12. Concrete mixing.

B. Related Requirements:

1. Section 032000 "Concrete Reinforcing" for steel reinforcing bars and welded-wire reinforcement
2. Section 03 3519 "Integrally Colored Concrete Finishing".

1.2 DEFINITIONS

A. Cementitious Materials: Portland cement or blended hydraulic cement alone or in combination with one or more of the following:

1. Fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

B. Water/Cementitious Materials (w/cm) Ratio: The ratio by weight of mixing water to cementitious materials.

1.3 ACTION SUBMITTALS

A. Product Data:

1. Portland cement.
2. Blended hydraulic cement.
3. Performance-based hydraulic cement.
4. Fly ash.
5. Slag cement.
6. Silica fume.

7. Natural or other pozzolans.
8. Aggregates.
9. Ground calcium carbonate and aggregate mineral fillers.
10. Admixtures:
 - a. Include limitations of use. Admixtures that do not comply with reference ASTM International requirements must be submitted with test data for approval.
11. Color pigments.
12. Fiber reinforcement.
13. Vapor retarders.
14. Floor and slab treatments.
15. Liquid floor treatments.
16. Curing materials.
 - a. Include documentation from color pigment manufacturer, indicating that proposed methods of curing are recommended by color pigment manufacturer.
17. Joint fillers.
18. Repair materials.

B. Design Mixtures: For each concrete mixture, include the following:

1. Mixture identification.
2. Compressive strength at 28 days or other age as specified.
3. Compressive strength required at stages of construction.
4. Durability exposure classes for Exposure Categories F, S, W, and C.
5. Maximum w/cm ratio.
6. Calculated equilibrium and fresh density for lightweight concrete.
7. Slump or slump flow limit.
8. Air content.
9. Nominal maximum aggregate size.
10. Steel-fiber reinforcement content.
11. Synthetic microfiber content.
12. Synthetic macrofiber content.
13. Intended placement method.
14. Submit adjustments to design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant changes.

C. Shop Drawings:

1. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
 - a. Location of construction joints is subject to approval of the Architect.

D. Samples: For manufacturer's standard colors for color pigment.

E. Concrete Schedule: For each location of each class of concrete indicated in "Concrete Mixture Class Types" Article, including the following:

1. Concrete class designation.
2. Location within Project.
3. Exposure class designation.
4. Formed surface finish designation and final finish.
5. Final finish for floors.
6. Floor treatment, if any.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For the following:

1. Installer: Include copies of applicable ACI certificates.
2. Testing Agency: Include documentation indicating compliance with ASTM E329 or ASTM C1077 and copies of applicable ACI certificates for testing technicians or ACI Concrete Construction Special Inspector - MH, ASCC.

B. Material Certificates: For each of the following:

1. Cementitious materials.
2. Admixtures.
3. Fiber reinforcement.
4. Curing compounds.
5. Floor and slab treatments.
6. Bonding agents.
7. Adhesives.
8. Vapor retarders.
9. Semirigid joint filler.
10. Joint-filler strips.
11. Repair materials.

C. Material Test Reports: For the following:

1. Portland cement.
2. Blended hydraulic cement.
3. Performance-based hydraulic cement.
4. Fly ash.
5. Slag cement.
6. Silica fume.
7. Natural or other pozzolans.
8. Aggregates.
9. Ground calcium carbonate and aggregate mineral filler.
10. Admixtures.

D. Floor surface flatness and levelness measurements report, indicating compliance with specified tolerances in accordance with ACI 117 and in compliance with ASTM E1155.

E. Research Reports:

1. For concrete admixtures in accordance with ICC's Acceptance Criteria AC198.

2. For sheet vapor retarder/termite barrier, showing compliance with ICC's Acceptance Criteria AC380.

F. Preconstruction Test Reports: For each mix design.

G. Field quality-control reports.

H. Minutes of preinstallation conference.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified Installer who employs Project personnel qualified as an ACI-certified Concrete Flatwork Associate and Concrete Flatwork Finisher and a supervisor who is a certified ACI Advanced Concrete Flatwork Finisher/Technician or an ACI Concrete Flatwork Finisher with experience installing and finishing concrete.

1. Post-Installed Concrete Anchors Installers: ACI-certified Adhesive Anchor Installer.

B. Ready-Mixed Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.

1. Manufacturer's production facilities and delivery vehicles certified in accordance with NRMCA's certification requirements or equivalent approval by a State DOT.

C. Laboratory Testing Agency Qualifications: A testing agency qualified in accordance with ASTM C1077 and ASTM E329 for testing that performs duties on behalf of the Architect/Engineer.

1. Personnel performing laboratory tests to be an ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Level 1. Testing agency laboratory supervisor tests to be an ACI-certified Concrete Laboratory Testing Technician, Level 2.

D. Field Quality-Control Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.

1. Personnel conducting field tests on plastic concrete properties are to be qualified as an ACI Concrete Field Testing Technician, Grade 1, in accordance with policies from ACI CPP 610.1 or an equivalent certification program.

E. Mockups: Cast concrete slab-on-ground panels to demonstrate typical joints, surface finish, texture, tolerances, floor treatments, and standard of workmanship. Provide up to two batches of concrete to demonstrate the number of required mockups.

1. Slab-on-Ground: Build panel in the location indicated or, if not indicated, as directed by Architect.
 - a. Divide panel into four equal panels to demonstrate saw joint cutting.

2. Formed Surfaces: Build panel in the location indicated or, if not indicated, as directed by Architect.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on each concrete mixture.
 1. Include the following information in each test report:
 - a. Admixture dosage rates.
 - b. Slump.
 - c. Air content.
 - d. Seven-day compressive strength.
 - e. 28-day compressive strength.
 - f. Evaluation of permeability-reducing admixtures.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Comply with ASTM C94/C94M and ACI 301.

1.8 FIELD CONDITIONS

- A. Cold-Weather Placement: Comply with ACI 301 as follows:
 1. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 2. When air temperature has fallen to, or is expected to fall below 40 deg F during the protection period, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 3. Do not use frozen materials or materials containing ice or snow.
 4. Do not place concrete in contact with surfaces less than 35 deg F, other than reinforcing steel.
- B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1, and as follows:
 1. Maintain concrete temperature at time of discharge to not exceed 95 deg F.
 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

1.9 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to furnish replacement sheet vapor retarder/termite barrier material and accessories for sheet vapor retarder/ termite barrier and accessories that do not comply with requirements or that fail to resist penetration by termites within specified warranty period.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CONCRETE STANDARDS

- A. ACI Publications: Comply with ACI 301 unless modified by requirements in the Contract Documents.

2.2 CONCRETE MATERIALS

A. Source Limitations:

1. Obtain all concrete mixtures from a single ready-mixed concrete manufacturer for entire Project.
2. Obtain each type of admixture from single source from single manufacturer.

B. Cementitious Materials:

1. Portland Cement: ASTM C150/C150M, Type II, gray.
2. Pozzolans: ASTM C618, Class C, F, or N.
3. Slag Cement: ASTM C989/C989M, Grade 100 or 120.
4. Ground Glass Pozzolan: ASTM C1866/C1866M, Type GS or GE.
5. Silica Fume: ASTM C1240.

C. Normal-Weight Aggregates:

1. Coarse Aggregate: ASTM C33/C33M, Class 3S
2. Maximum Coarse-Aggregate Size: 1-1/2 inches nominal.
3. Fine Aggregate: ASTM C33/C33M.
4. Recycled Aggregate: Provide documentation of characteristics of recycled aggregate and mechanical properties and durability of proposed concrete, which incorporates recycled aggregate to conform to applicable requirements for the class of concrete.
5. Alkali-Silica Reaction: Comply with one of the following for each aggregate used:
 - a. Expansion Result of Aggregate: Not more than 0.04 percent at one year when tested in accordance with ASTM C1293.
 - b. Expansion Results of Aggregate and Cementitious Materials in Combination: Not more than 0.10 percent at an age of 16 days when tested in accordance with ASTM C1567. Do not use this option with fly ash with an alkali content greater than 4.0 percent. Submit supporting data for each aggregate showing expansion in excess of 0.10 percent when tested in accordance with ASTM C1260.
 - c. Alkali Content in Concrete: Not to exceed 4 lb./cu. yd. for aggregate with expansion greater than or equal to 0.04 percent and less than 0.12 percent or 3 lb./cu. yd. for aggregate with expansion greater than or equal to 0.12 percent and less than 0.24 percent. Test aggregate reactivity in accordance with ASTM C1293. Calculate alkali content of concrete in accordance with ACI 301. Do not use this option with natural pozzolan or fly ash that has a calcium oxide content greater

than 18 percent or an alkali content greater than 4.0 percent; or for an aggregate with expansion at one year greater than or equal to 0.24 percent when tested in accordance with ASTM C1293.

- D. Ground Calcium Carbonate or Aggregate Mineral Filler: ASTM C1797. Unless otherwise permitted, do not use mineral filler derived from carbonate sources in concrete for members assigned to Exposure Class S1, S2, or S3.

2.3 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C260/C260M.
- B. Chemical Admixtures: Do not use calcium chloride or admixtures containing calcium chloride.
 - 1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
 - 2. Retarding Admixture: ASTM C494/C494M, Type B.
 - 3. Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type D.
 - 4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
 - 5. High-Range, Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type G.
 - 6. Admixtures with special properties, with documentation of claimed performance enhancement, ASTM C494/C494M, Type S.
- C. Color Pigment: ASTM C979/C979M, synthetic mineral-oxide pigments, color stable, free of carbon black, nonfading, and resistant to lime and other alkalis.
 - 1. Color: Match Architect's sample.
- D. Mixing Water for Concrete Mixtures and Water Used to Make Ice: ASTM C1602/C1602M. Include documentation of compliance with limits for alkalis, sulfates, chlorides, or solids content of mixing water from Table 2 in ASTM C1602/C1602M.

2.4 VAPOR RETARDERS

- A. Sheet Vapor Retarder, Class A: ASTM E1745, Class A. Include manufacturer's recommended thickness and adhesive or pressure-sensitive tape.

2.5 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- C. Moisture-Retaining Cover: ASTM C171, polyethylene film burlap-polyethylene sheet.
 - 1. Color:
 - a. Ambient Temperature Below 50 deg F (10 deg C): Black.
 - b. Ambient Temperature between 50 and 85 deg F (10 and 29 deg C): Any color.

- c. Ambient Temperature Above 85 deg F (29 deg C): White.
- D. Curing Paper: 8 ft. wide paper, consisting of two layers of fibered kraft paper laminated with double coating of asphalt.
- E. Water: Potable water that does not cause staining of the surface.

2.6 ACCESSORIES

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber or ASTM D1752, cork or self-expanding cork.
- B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 in accordance with ASTM D2240.
- C. Bonding Agent: ASTM C1059/C1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.
- D. Epoxy Bonding Adhesive: ASTM C881/C881M, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade and class to suit requirements, and as follows:
 - 1. Types I and II, nonload bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
- E. Floor Slab Protective Covering: 8 ft. wide cellulose fabric.

2.7 CONCRETE MIXTURE MATERIALS

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, in accordance with ACI 301.
 - 1. Use a qualified testing agency for preparing and reporting proposed mixture designs, based on laboratory trial mixtures.
- B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland or hydraulic cement in concrete assigned to Exposure Class F3 as follows:
 - 1. Fly Ash or Other Pozzolans: 25 percent by mass.
 - 2. Slag Cement: 50 percent by mass.
 - 3. Silica Fume: 10 percent by mass.
 - 4. Total of Fly Ash or Other Pozzolans, Slag Cement, and Silica Fume: 50 percent by mass, with fly ash or pozzolans not exceeding 25 percent by mass and silica fume not exceeding 10 percent by mass.
 - 5. Total of Fly Ash or Other Pozzolans and Silica Fume: 35 percent by mass with fly ash or pozzolans not exceeding 25 percent by mass and silica fume not exceeding 10 percent by mass.
- C. Admixtures: Use admixtures in accordance with manufacturer's written instructions.

1. Use corrosion-inhibiting admixture in concrete mixtures where indicated.
- D. Color Pigment: Add color pigment to concrete mixture in accordance with manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.

2.8 CONCRETE MIXTURE CLASS TYPES

- A. Class A: Normal-weight concrete used for footings, grade beams, and tie beams.
1. Exposure Class: ACI 318 Class F1.
 2. Minimum Compressive Strength: 4000 psi at 28 days.
 3. Maximum w/cm Ratio: 0.45.
 4. Air Content:
 - a. Exposure Class F1: 4.5 percent, plus or minus 1.5 percent at point of delivery for concrete containing 1-1/2-inch nominal maximum aggregate size.
- B. Class C: Normal-weight concrete used for interior slabs-on-ground.
1. Exposure Class: ACI 318 Class F0.
 2. Minimum Compressive Strength: 3000 psi at 28 days.
 3. Maximum w/cm Ratio : 0.45.
 4. Air Content:
 - a. Do not use an air-entraining admixture or allow total air content to exceed 3 percent for concrete used in trowel-finished floors.

2.9 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete in accordance with ASTM C94/C94M and furnish delivery ticket.
- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete in accordance with ASTM C94/C94M. Mix concrete materials in appropriate drum-type batch machine mixer.
1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than five minutes after ingredients are in mixer, before any part of batch is released.
 2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd..
 3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions:

1. Before placing concrete, verify that installation of concrete forms, accessories, reinforcement, and embedded items is complete and that required inspections have been performed.
2. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Provide reasonable auxiliary services to accommodate field testing and inspections, acceptable to testing agency, including the following:
 1. Daily access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Secure space for storage, initial curing, and field curing of test samples, including source of water and continuous electrical power at Project site during site curing period for test samples.
 4. Security and protection for test samples and for testing and inspection equipment at Project site.

3.3 TOLERANCES

- A. Comply with ACI 117.

3.4 INSTALLATION OF EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining Work that is attached to or supported by cast-in-place concrete.
 1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 2. Install reglets to receive waterproofing and through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

3.5 INSTALLATION OF VAPOR RETARDERS

- A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder in accordance with ASTM E1643 and manufacturer's written instructions.
 1. Install vapor retarder with longest dimension parallel with direction of concrete pour.
 2. Face laps away from exposed direction of concrete pour.
 3. Lap vapor retarder over footings and grade beams not less than 6 inches, sealing vapor retarder to concrete.
 4. Lap joints 6 inches and seal with manufacturer's recommended tape.
 5. Terminate vapor retarder at the top of floor slabs, grade beams, and pile caps, sealing entire perimeter to floor slabs, grade beams, foundation walls, or pile caps.
 6. Seal penetrations in accordance with vapor retarder manufacturer's instructions.
 7. Protect vapor retarder during placement of reinforcement and concrete.

- a. Repair damaged areas by patching with vapor retarder material, overlapping damages area by 6 inches on all sides and sealing to vapor retarder.
- B. Bituminous Vapor Retarders: Place, protect, and repair bituminous vapor retarder in accordance with manufacturer's written instructions.

3.6 INSTALLATION OF CAST-IN-PLACE CONCRETE

- A. Before placing concrete, verify that installation of formwork, reinforcement, embedded items, and vapor retarder is complete and that required inspections are completed.
 - 1. Immediately prior to concrete placement, inspect vapor retarder for damage and deficient installation, and repair defective areas.
 - 2. Provide continuous inspection of vapor retarder during concrete placement and make necessary repairs to damaged areas as Work progresses.
- B. Notify Architect and testing and inspection agencies 24 hours prior to commencement of concrete placement.
- C. Water addition in transit or at the Project site must be in accordance with ASTM C94/C94M and must not exceed the permitted amount indicated on the concrete delivery ticket.
- D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness.
 - 1. If a section cannot be placed continuously, provide construction joints as indicated.
 - 2. Deposit concrete to avoid segregation.
 - 3. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
 - 4. Consolidate placed concrete with mechanical vibrating equipment in accordance with ACI 301.
 - a. Do not use vibrators to transport concrete inside forms.
 - b. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer.
 - c. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity.
 - d. At each insertion, limit duration of vibration to time necessary to consolidate concrete, and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
 - 1. Do not place concrete floors and slabs in a checkerboard sequence.
 - 2. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 - 3. Maintain reinforcement in position on chairs during concrete placement.
 - 4. Screed slab surfaces with a straightedge and strike off to correct elevations.
 - 5. Level concrete, cut high areas, and fill low areas.

6. Slope surfaces uniformly to drains where required.
7. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface.
8. Do not further disturb slab surfaces before starting finishing operations.

3.7 INSTALLATION OF JOINTS

- A. Construct joints true to line, with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Coordinate with floor slab pattern and concrete placement sequence.
 1. Install so strength and appearance of concrete are not impaired, at locations indicated on Drawings or as approved by Architect.
 2. Place joints perpendicular to main reinforcement.
 - a. Continue reinforcement across construction joints unless otherwise indicated.
 3. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
 4. Locate joints for beams, slabs, joists, and girders at third points of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
 5. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
 6. Space vertical joints in walls as indicated on Drawings. Unless otherwise indicated on Drawings, locate vertical joints beside piers integral with walls, near corners, and in concealed locations where possible.
 7. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
 8. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Control Joints in Slabs-on-Ground: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of concrete thickness as follows:
 1. Sawed Joints: Form control joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random cracks.
- D. Isolation Joints in Slabs-on-Ground: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
 1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated on Drawings.
 2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface, where joint sealants, specified in Section 079200 "Joint Sealants," are indicated.
 3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

3.8 APPLICATION OF FINISHING FLOORS AND SLABS

A. Scratch Finish:

1. While still plastic, texture concrete surface that has been screeded and bull-floated or darbied.
2. Use stiff brushes, brooms, or rakes to produce a profile depth of 1/4 inch in one direction.

B. Float Finish:

1. When bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operation of specific float apparatus, consolidate concrete surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats.
2. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture and complies with ACI 117 tolerances for conventional concrete.

C. Trowel Finish:

1. After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel.
2. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance.
3. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
4. Do not add water to concrete surface. Use of an approved finishing aid is acceptable.
5. Do not apply troweled finish to concrete, which has a total air content greater than 3 percent.
6. Finish surfaces to the following tolerances, in accordance with ASTM E1155, for a randomly trafficked floor surface:
 - a. Slabs on Ground:
 - 1) Specified overall values of flatness, F_F 50; and of levelness, F_L 35; with minimum local values of flatness, F_F 40; and of levelness, F_L 24.
 - a) Remove enough of the upper portion of the concrete slab to provide a uniform appearance in accordance with the architect's sample.

D. Trowel and Fine-Broom Finish: First apply a trowel finish to surfaces. While concrete is still plastic, slightly scarify surface with a fine broom perpendicular to main traffic route.

1. Coordinate required final finish with Architect before application.
2. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.

E. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and locations indicated on Drawings.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with a fiber-bristle broom perpendicular to main traffic route.
2. Coordinate required final finish with Architect before application.

F. Slip-Resistive Finish: Before final floating, apply slip-resistive aggregate finish to concrete stair treads, platforms, and ramps, as indicated on Drawings.

1. Apply in accordance with manufacturer's written instructions and as follows:
 - a. Uniformly spread 25 lb/100 sq. ft. of dampened slip-resistive aggregate over surface in one or two applications.
 - b. Tamp aggregate flush with surface, but do not force below surface.

3.9 APPLICATION OF FINISHING FORMED SURFACES

A. As-Cast Surface Finishes:

1. ACI 301 (ACI 301M) Surface Finish SF-1.0: As-cast concrete texture imparted by form-facing material.
 - a. Patch voids larger than 1-1/2 inches wide or 1/2 inch deep.
 - b. Remove projections larger than 1 inch.
 - c. Tie holes do not require patching.
 - d. Surface Tolerance: ACI 117, Class D.
 - e. Apply to concrete surfaces for metal lap pan deck formed surfaces and those surfaces that are buried or covered with subsequent installed surfaces.

3.10 INSTALLATION OF MISCELLANEOUS CONCRETE ITEMS

A. Filling in:

1. Fill in holes and openings left in concrete structures after Work of other trades is in place unless otherwise indicated.
2. Mix, place, and cure concrete, as specified, to match color and texture with in-place construction exposed to view.
3. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations:

1. Coordinate sizes and locations of concrete bases with actual equipment provided.
2. Construct concrete bases 6 inches high unless otherwise indicated on Drawings, and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated on Drawings, or unless required for seismic anchor support.
3. Minimum Compressive Strength: 4000 psi at 28 days.
4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete substrate.
6. Prior to pouring concrete, place and secure anchorage devices.

- a. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
- b. Cast anchor-bolt insert into bases.
- c. Install anchor bolts to elevations required for proper attachment to supported equipment.

3.11 APPLICATION OF CONCRETE CURING

- A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
 1. Comply with ACI 301 for cold weather protection during curing.
 2. Comply with ACI 301 and ACI 305.1 for hot-weather protection during curing.
 3. Maintain moisture loss no more than 0.2 lb/sq. ft. x h, calculated in accordance with ACI 305R, before and during finishing operations.
- B. Curing Formed Surfaces: Comply with ACI 308.1 as follows:
 1. Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces.
 2. Cure concrete containing color pigments in accordance with color pigment manufacturer's instructions.
 3. If forms remain during curing period, moist cure after loosening forms.
 4. If removing forms before end of curing period, continue curing for remainder of curing period as follows:
 - a. Continuous Fogging: Maintain standing water on concrete surface until final setting of concrete.
 - b. Continuous Sprinkling: Maintain concrete surface continuously wet.
 - c. Absorptive Cover: Pre-dampen absorptive material before application; apply additional water to absorptive material to maintain concrete surface continuously wet.
 - d. Water-Retention Sheeting Materials: Cover exposed concrete surfaces with sheeting material, taping, or lapping seams.
 - e. Membrane-Forming Curing Compound: Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.
 - 1) Recoat areas subject to heavy rainfall within three hours after initial application.
 - 2) Maintain continuity of coating and repair damage during curing period.
- C. Curing Unformed Surfaces: Comply with ACI 308.1 as follows:
 1. Begin curing after finishing concrete.
 2. Interior Concrete Floors:
 - a. Floors to Receive Floor Coverings Specified in Other Sections: Contractor has option of the following:

- 1) Absorptive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.
 - a) Lap edges and ends of absorptive cover not less than 12 inches.
 - b) Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.

 - 2) Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive.
 - a) Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
 - b) Cure for not less than seven days.

 - 3) Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following not in cold weather:
 - a) Water.
 - b) Continuous water-fog spray.
- b. Floors to Receive Penetrating Liquid Floor Treatments: Contractor has option of the following:
- 1) Absorptive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.
 - a) Lap edges and ends of absorptive cover not less than 12 inches.
 - b) Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.

 - 2) Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive.
 - a) Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
 - b) Cure for not less than seven days.

 - 3) Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following:
 - a) Water.
 - b) Continuous water-fog spray.

- c. Floors to Receive Polished Finish: Contractor has option of the following:
 - 1) Absorptive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.
 - a) Lap edges and ends of absorptive cover not less than 12 inches.
 - b) Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.
 - 2) Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following:
 - a) Water.
 - b) Continuous water-fog spray.
- d. Floors To Receive Chemical Stain:
 - 1) As soon as concrete has sufficient set to permit application without marring concrete surface, install curing paper over entire area of floor.
 - 2) Install curing paper square to building lines, without wrinkles, and in a single length without end joints.
 - 3) Butt sides of curing paper tight; do not overlap sides of curing paper.
 - 4) Leave curing paper in place for duration of curing period, but not less than 28 days.
- e. Floors To Receive Urethane Flooring:
 - 1) As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.
 - 2) Rewet absorptive cover, and cover immediately with polyethylene moisture-retaining cover with edges lapped 6 inches and sealed in place.
 - 3) Secure polyethylene moisture-retaining cover in place to prohibit air from circulating under polyethylene moisture-retaining cover.
 - 4) Leave absorptive cover and polyethylene moisture-retaining cover in place for duration of curing period, but not less than 28 days.
- f. Floors To Receive Curing Compound:
 - 1) Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.
 - 2) Recoat areas subjected to heavy rainfall within three hours after initial application.
 - 3) Maintain continuity of coating, and repair damage during curing period.
 - 4) Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.
- g. Floors To Receive Curing and Sealing Compound:

- 1) Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller in accordance with manufacturer's written instructions.
- 2) Recoat areas subjected to heavy rainfall within three hours after initial application.
- 3) Repeat process 24 hours later, and apply a second coat. Maintain continuity of coating, and repair damage during curing period.

3.12 APPLICATION OF LIQUID FLOOR TREATMENTS

- A. Penetrating Liquid Floor Treatment: Prepare, apply, and finish penetrating liquid floor treatment in accordance with manufacturer's written instructions.
 1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants and complete surface repairs.
 2. Do not apply to concrete that is less than 28 days' old.
 3. Apply liquid until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing.
 4. Rinse with water; remove excess material until surface is dry.
 5. Apply a second coat in a similar manner if surface has received a float finish or abrasive surface preparation.
- B. Sealing Coat: Uniformly apply a continuous sealing coat of curing and sealing compound to hardened concrete by power spray or roller in accordance with manufacturer's written instructions.

3.13 INSTALLATION OF JOINT FILLING

- A. Prepare, clean, and install joint filler in accordance with manufacturer's written instructions.
 1. Defer joint filling until concrete has aged at least six month(s).
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.
- C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints.
- D. Overfill joint, and trim joint filler flush with top of joint after hardening.

3.14 INSTALLATION OF CONCRETE SURFACE REPAIRS

- A. Defective Concrete:
 1. Repair and patch defective areas when approved by Architect.
 2. Remove and replace concrete that cannot be repaired and patched to meet specification requirements.

- B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks in excess of 0.01 inch spalls, air bubbles exceeding surface finish limits, honeycombs, rock pockets, fins and other projections on the surface exceeding surface finish limits, and stains and other discolorations that cannot be removed by cleaning.
 - 1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete.
 - a. Limit cut depth to 3/4 inch.
 - b. Make edges of cuts perpendicular to concrete surface.
 - c. Clean, dampen with water, and brush-coat holes and voids with bonding agent.
 - d. Fill and compact with patching mortar before bonding agent has dried.
 - e. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
 - 2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement, so that, when dry, patching mortar matches surrounding color.
 - a. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching.
 - b. Compact mortar in place and match surrounding surface.
 - 3. Repair defects on concealed formed surfaces that will affect concrete's durability and structural performance, as determined by Architect.
- D. Repairing Unformed Surfaces:
 - 1. Test unformed surfaces, such as floors and slabs, for finish, and verify surface tolerances specified for each surface.
 - a. Correct low and high areas.
 - b. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
 - 2. Repair finished surfaces containing surface defects, including spalls, popouts, honeycombs, rock pockets, crazing, and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width.
 - 3. After concrete has cured at least 14 days, correct high areas by grinding.
 - 4. Correct localized low areas during, or immediately after, completing surface-finishing operations by adding patching mortar.
 - a. Finish repaired areas to blend into adjacent concrete.
 - 5. Correct other low areas scheduled to receive floor coverings with a repair underlayment.

- a. Prepare, mix, and apply repair underlayment and primer in accordance with manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 - b. Feather edges to match adjacent floor elevations.
6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete.
- a. Remove defective areas with clean, square cuts, and expose steel reinforcement with at least a 3/4-inch clearance all around.
 - b. Dampen concrete surfaces in contact with patching concrete and apply bonding agent.
 - c. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate.
 - d. Place, compact, and finish to blend with adjacent finished concrete.
 - e. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar.
- a. Groove top of cracks and cut out holes to sound concrete, and clean off dust, dirt, and loose particles.
 - b. Dampen cleaned concrete surfaces and apply bonding agent.
 - c. Place patching mortar before bonding agent has dried.
 - d. Compact patching mortar and finish to match adjacent concrete.
 - e. Keep patched area continuously moist for at least 72 hours.
- E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.
- F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.15 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a special inspector to perform field tests and inspections and prepare testing and inspection reports.
- B. Delivery Tickets: comply with ASTM C94/C94M.
- C. Inspections:
 - 1. Headed bolts and studs.
 - 2. Verification of use of required design mixture.
 - 3. Concrete placement, including conveying and depositing.
 - 4. Curing procedures and maintenance of curing temperature.
 - 5. Verification of concrete strength before removal of shores and forms from beams and slabs.
 - 6. Batch Plant Inspections: On a random basis, as determined by Architect.

- D. Concrete Tests: Testing of composite samples of fresh concrete obtained in accordance with ASTM C 172/C 172M to be performed in accordance with the following requirements:
1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 150 cu. yd. or fraction thereof.
 - a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing is to be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 2. Slump: ASTM C143/C143M:
 - a. One test at point of delivery for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 - b. Perform additional tests as needed.
 3. Slump Flow: ASTM C1611/C1611M:
 - a. One test at point of delivery for each composite sample when strength test specimens are cast, but not less than one test for each day's pour of each concrete mixture.
 - b. Perform additional tests as needed.
 4. Air Content: ASTM C231/C231M pressure method, for normal-weight concrete;
 - a. One test for each composite sample when strength test specimens are cast, but not less than one test for each day's pour of each concrete mixture.
 5. Concrete Temperature: ASTM C1064/C1064M:
 - a. One test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample when strength test specimens are cast.
 6. Concrete Density: ASTM C138/C138M:
 - a. One test for each composite sample when strength test specimens are cast.
 7. Compression Test Specimens: ASTM C31/C31M:
 - a. Cast and standard cure two sets of two 6 inches by 12-inches or 4-inch by 8-inch cylindrical specimens for each composite sample.
 - b. Cast, and field cure two sets of four standard cylindrical specimens for each composite sample.
 8. Compressive-Strength Tests: ASTM C39/C39M.
 - a. Test one set of four standard cured specimens at seven days and one set of two specimens at 28 days.
 - b. A compressive-strength test to be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

9. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor to evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
 10. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests of standard cured cylinders equals or exceeds specified compressive strength, and no compressive-strength test value falls below specified compressive strength by more than 500 psi if specified compressive strength is 5000 psi, or no compressive strength test value is less than 10 percent of specified compressive strength if specified compressive strength is greater than 5000 psi.
 11. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
 12. Additional Tests:
 - a. Testing and inspecting agency to make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.
 - b. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42/C42M or by other methods as directed by Architect.
 - 1) Acceptance criteria for concrete strength to be in accordance with ACI 301, Section 1.7.6.3.
 13. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
 14. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.
- E. Measure floor and slab flatness and levelness in accordance with ASTM E1155 within 48 hours of completion of floor finishing and promptly report test results to Architect.

3.16 PROTECTION

- A. Protect concrete surfaces as follows:
1. Protect from petroleum stains.
 2. Diaper hydraulic equipment used over concrete surfaces.
 3. Prohibit vehicles from interior concrete slabs.
 4. Prohibit use of pipe-cutting machinery over concrete surfaces.
 5. Prohibit placement of steel items on concrete surfaces.
 6. Prohibit use of acids or acidic detergents over concrete surfaces.
 7. Protect liquid floor treatment from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by liquid floor treatments installer.
 8. Protect concrete surfaces scheduled to receive surface hardener or polished concrete finish using floor slab protective covering.

END OF SECTION 03 30 00

SECTION 03 35 19 - INTEGRALLY COLORED CONCRETE FINISHING

PART 1 -GENERAL

1.1 SUMMARY

A. Section Includes:

1. Integrally colored finishes for site-cast concrete.
2. Locations: interior concrete floors per Room Finish Schedule; exterior concrete per “Exterior Color Concrete Diagram”.
3. If this Section conflicts with Related Sections:
 - a. This Section takes precedence for matters that affect concrete appearance.
 - b. Related Sections take precedence for matters that do not affect concrete appearance.
 - c. In case of conflicts, notify Architect for clarification.

B. Related Sections

1. Related Site Cast Concrete Sections:

- a. Division 03 Section "Cast-in-Place Concrete": Basic requirements for concrete and coordination of sample submittal.
- b. Division 03 Section: “Polished Concrete Floor System” Basic requirements for polishing and coordination of sample submittal.
- c. Division 31 Section "Site Concrete": Basic requirements for concrete and coordination of sample submittal.

2. Other Related Sections:

- a. Division 07 Section "Joint Sealants": Colored sealants for joints.

1.2 REFERENCE STANDARDS

- A. ACI 301 – Structural Concrete.
- B. ACI 303.1 – Cast-in-Place Architectural Concrete.
- C. ACI 305.1 – Hot Weather Concreting.
- D. ACI 306.1 – Cold Weather Concreting.
- E. ACI 308R – Curing Concrete.
- F. ACI 318 – Building Code Requirements for Structural Concrete.
- G. ASTM C309 – Liquid Membrane-Forming Compounds for Curing Concrete.
- H. ASTM C979 – Pigments for Integrally Colored Concrete.

1.3 SUBMITTALS

A. Product Data:

1. Color additives.
 2. Curing products.
 3. Proprietary cleaning agents.
 4. Surface retarders.
- B. Samples for Verification: Submit sample chip of specified concrete colors indicating Davis color name.

1.4 QUALITY ASSURANCE

- A. Perform work in accordance with: ACI 303.1, ACI 305.1, ACI 306.1, ACI 318.
- B. Obtain each material from same source and maintain high degree of consistency in workmanship throughout Project.
- C. Installer Qualifications: Concrete work shall be by firm with [five]<Other number> years experience with work of similar scope and quality.
- D. Integrally Colored Concrete Mock-Up:
 1. Provide full-scale mock-up under Division 01 Section "Quality Requirements". Construct at least one month before start of other concrete work to allow concrete to cure before observation.
 2. At location acceptable to Architect, demonstrate methods used for construction, including forming and finishing conditions required for Project using materials, workmanship, joint treatments, and curing methods to be used throughout Project.
 3. Accepted mock-up provides visual standard for work of Section.
 4. Mock-up may remain as part of Work.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Color Additive: Deliver, store, and handle in accordance with manufacturer's instructions.
- B. Concrete: Schedule delivery to provide consistent mix times from time color additive is placed in mixture until placement of integrally colored concrete.

PART 2 -PRODUCTS

2.1 CONCRETE MATERIALS

- A. Cements:
 1. Types: As specified in Related Sections
 2. Colors: Gray.
- B. Fine Aggregate:
 1. Types: As specified in Related Sections.
 2. Color: Locally available natural aggregate.
- C. Coarse Aggregate:
 1. Types: As specified in Related Sections.

2. Color: Locally available natural aggregate.

3. Water: Clean and potable.

D. Admixtures: Do not use calcium chloride admixtures.

2.2 COLOR ADDITIVES

A. Manufacturer: Davis Colors

1. Contact Information:

a. Phone: 800-356-4848 or 323-269-7311.

b. E-mail: info@daviscolors.com.

c. Web Site: www.daviscolors.com.

2. Subject to compliance with requirements, products of equal performance may be used based on the architect's review of submittals per Section 01 6300 "Product Substitution Procedures"

B. Type:

1. Concentrated pigments specially processed for mixing into concrete and complying with ASTM C979.

2. Color additives containing carbon black are not acceptable.

C. Color Additive Delivery:

1. Automated Dispensing: Meter and dispense colors using computer-controlled automated color weighing and dispensing system. Use Davis Colors Chameleon liquid metering system and Hydrotint liquid color additives.

2. Manual Dispensing: Use Davis Colors Mix-Ready powdered color additives in pre-measured disintegrating bags.

2.3 CONCRETE FLATWORK

A. Surface Retarder: Top-Cast® surface retarder by Grace Construction Products, www.graceconstructionproducts.com.

B. Curing Compound for Flatwork: Davis Colors Color Seal II, tinted to match integrally colored concrete; complying with ASTM C309 and designed for use on integrally colored concrete.

C. Moist Curing Blankets: McTech Group (www.mctechgroup.com) UltraCure NCF, and UltraCure SUN (where direct sun exposure is expected) disposable curing blankets designed for use on colored or decorative concrete and to keep surface of concrete moist for seven days.

2.4 ACCESSORIES

A. Reinforcing Bar Supports: Use corrosion-resistant types at locations contacting exposed surfaces.

B. Joint Sealants:

1. Provide type specified in Division 07 Section "Joint Sealants".

2. Color: Color selected by Architect from manufacturer's full range to match integrally colored concrete.

C. Cleaning Agents: Use products known to be compatible with integrally colored concrete.

2.5 MIXES

- A. Slump: 4 inches. If greater slump is required, use water-reducing or super-plasticizing admixture; do not add water.
- B. Color Additives: Mix in accordance with manufacturer's instructions. Mix until color additives are uniformly dispersed throughout mixture and disintegrating bags, if used, have disintegrated.
- C. Do not re-temper mix or add water in field.

2.6 CONCRETE COLORS

A. Concrete Color Additive

1. Terra Cotta #10134 by DAVIS COLORS.

PART 3 -EXECUTION

3.1 EXAMINATION

- A. Do not place integrally colored concrete where standing water is present.

3.2 INSTALLATION

- A. Comply with color admixture manufacturer's recommendations unless otherwise specified in this Section.

3.3 FLATWORK

A. Finishing:

1. Broom Finish: Pull broom across freshly floated concrete to produce medium texture in straight lines perpendicular to main line of traffic. Do not dampen brooms.

B. Curing

1. Apply moist curing blanket in accordance with manufacturer's instructions. Apply curing at consistent time for each pour.
2. Maintain concrete between 65° and 85°F during curing.

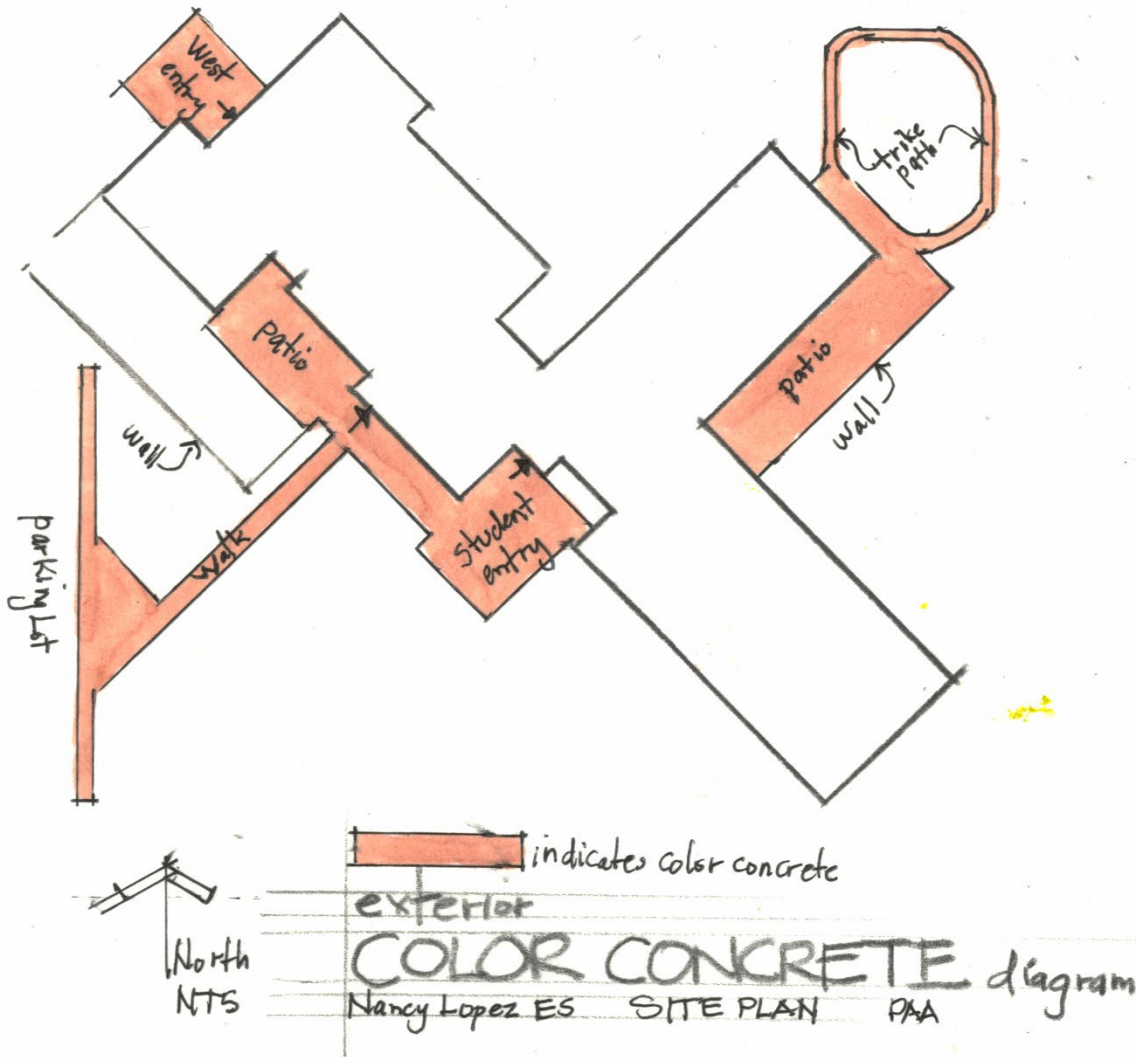
3.4 APPEARANCE TOLERANCES

- A. Appearance: Minor variations in appearance of integrally colored concrete that are similar to natural variations in color and appearance of uncolored concrete are acceptable.

3.5 CLEANING

- A. Efflorescence: Remove efflorescence as soon as practical after it appears; and as part of final cleaning.

- B. Use least aggressive cleaning techniques possible
- C. If proprietary cleaning agents are used, pre-wet surface, test cleaning agent on small, inconspicuous area, and check effects prior to proceeding. Thoroughly rinse surface afterwards with clean water. Follow cleaner manufacturer's instructions.
- D. Do not use muriatic or hydrochloric acid on integrally colored concrete.



TERRA COTTA #10134 BY DAVIS COLORS

END OF SECTION 03 3519

SECTION 03 3536 - POLISHED CONCRETE FLOOR SYSTEM

PART 1 -GENERAL

1.1 SECTION INCLUDES

- A. Polished concrete floor system.

1.2 RELATED SECTIONS

- A. Section 03 3000 – Cast-in-Place Concrete.

1.3 REFERENCES

- A. ASTM C 1028 – Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method.
- B. ASTM D 523 – Standard Test Method for Specular Gloss.
- C. ASTM E 1155 – Standard Test Method for Determining F_F Floor Flatness and F_L Floor Levelness Numbers.

1.4 SYSTEM DESCRIPTION

- A. Installation of polished concrete floor system for new interior concrete floors by dry grinding and polishing with various size grit metal-bonded and resin-bonded diamonds and application of concrete densifier.

1.5 SUBMITTALS

- A. Comply with Section 01 3300 – Submittal Procedures.
- B. Product Data: Submit installer's product data, including surface preparation and installation instructions.
- C. Installer's Project References: Submit installer's list of successfully completed polished concrete floor system projects, including project name and location, name of architect, and type and quantity of polished concrete floor system installed.
- D. Maintenance Manual: Submit installer's maintenance manual, including maintenance and cleaning instructions for polished concrete floor system.

1.6 QUALITY ASSURANCE

- A. Pre-installation Meeting:
 - 1. Convene pre-installation meeting before start of installation of polished concrete floor system.
 - 2. Require attendance of parties directly affecting work of this section, including Owner, Contractor, Architect, and installer.
 - 3. Review examination, surface preparation, installation, field quality control, protection, and coordination with other work.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage:
 - 1. Store materials in clean, dry area indoors in accordance with manufacturer's instructions.
 - 2. Keep materials from freezing.
- C. Handling: Protect materials during handling and application to prevent contamination or damage.

PART 2 -PRODUCTS

2.1 ACCEPTABLE INSTALLERS

- A. Albuquerque Polished Concrete, 505-888-1927
- B. Industrial Commercial Coatings, 505-898-4653

2.2 EQUIPMENT TO BE USED FOR INSTALLATION

- A. Floor Grinder:
 - 1. Model: Concrete Polishing Solutions "G-320" (or equivalent).
 - 2. Type: Multi-orbital, planetary-action, opposing-rotational, diamond-headed floor grinder.
 - 3. Weight: 850 pounds.
 - 4. Grinding Pressure: 675 pounds.
 - 5. Grinding Width: 32 inches.
 - 6. Motor: 15 HP.
 - 7. Maximum RPM: 1,750.
 - 8. Head: 3-head system contours to floor surface.
- B. Vacuum System:
 - 1. Model: Concrete Polishing Solutions "CAT 5 Dust Extractor" (or equivalent).
 - 2. Filtration: Direct-connect, HEPA filtration system.
- C. Diamond Tooling for Coating Removal, Initial Grinding, and Preparing Floor for Polishing:
 - 1. Concrete Polishing Solutions "MFL" 40-grit metal-bonded diamonds (or equivalent).
 - 2. Concrete Polishing Solutions "MFL" 80-grit metal-bonded diamonds (or equivalent).
 - 3. Concrete Polishing Solutions "MFL" 150-grit metal-bonded diamonds (or equivalent).

2.3 MATERIALS

- A. Concrete Densifier:
 - 1. Concrete Polishing Solutions "Armor Densifier MFL" (or equivalent).
 - a. Permanent sealing, densifying, and hardening compound for concrete.
 - b. Odorless.
 - c. VOC: 0
- B. Concrete Sealer:

1. Concrete Polishing Solutions “Armor Stain Shield MFL” (or equivalent).

C. Architect’s Sample

1. Finished product shall match sample in the Architect’s office.

PART 3 -EXECUTION

3.1 EXAMINATION

- A. Examine floor to receive polished concrete floor system.

- B. Notify Architect of conditions that would adversely affect installation or subsequent use.

- C. Do not begin surface preparation or installation until unacceptable conditions are corrected.

- D. Verify the Following for New Concrete Floors:

1. Floor Finish: Bull-floated, smooth, pan-finished floor from edge to edge, with no rough areas.

2. Floor and Joints:

- a. Free of debris and excessive dirt, dust, clay, and mud.
- b. Dry.

3. Floor Surface Profile:

- a. Overall Floor Flatness Number (F_F) 25, min. local value (F_F) = 17.
- b. Overall Floor Levelness Number (F_L) 17, min. local value (F_L) = 15.

4. Concrete Compressive Strength: 3,500 psi to 5,000 psi.

5. Lightweight Concrete: Not allowed.

6. Concrete Curing: Minimum 8 days water cured or dissipating curing compound applied.

7. Concrete Adjacent to Floor Penetrations: Troweled flat and level with surrounding concrete.

- E. Mock-Ups:

1. Construct mock-ups in accordance with Section 01 4000- Quality Requirements.

2. Mock-Up Size: 100 ft² sample panel at jobsite at location as directed under conditions similar to those which will exist during actual placement.

3. Mock-up will be constructed to match Architects sample and used to judge workmanship, concrete substrate preparation, operation of equipment, material application, color selection, dye placement & color and shine. Perform ASTM D523-standard Test Method as cited in Section 2.02 Finishes and provide printed results to architect prior to commencement of work.

4. Allow 48 hours for inspection of mock-up before proceeding with work.

5. When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work.

- F. Pre installation Meetings: Conduct a pre installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements. Review the following:

1. Environmental requirements.

2. Scheduling and phasing of work.
3. Coordinating with other work and personnel.
4. Protection of adjacent surfaces.
5. Surface preparation.
6. Repair of defects and defective work prior to installation.
7. Cleaning.
8. Installation of polished floor finishes.
9. Application of liquid hardener, densifier.
10. Protection of finished surfaces after installation.

3.2 SURFACE PREPARATION

- A. Protection: Protect surrounding areas and adjacent surfaces from the following:
 1. Minimal accumulation of dust from grinding and polishing.
 2. Contact with overspray of concrete densifier.
 3. Contact with overspray of concrete sealer.
- B. Surface Preparation: Prepare surfaces in accordance with installer's instructions.
- C. Clean Surfaces: Remove dirt, dust, debris, oil, grease, curing agents, bond breakers, paint, coatings, and other surface contaminants which could adversely affect installation of polished concrete floor system.

3.3 INSTALLATION

- A. Install polished concrete floor system in accordance with installer's instructions at locations indicated on the Drawings.
- B. Aggregate Exposure:
 1. Small Aggregate: salt and pepper finish, medium aggregate exposure.
- C. Polished Concrete Floor System: 800 grit finish– High Sheen.
 1. Preparation Step:
 - a. On new concrete: start with a 40 grit metal-bonded diamond to expose small to medium aggregate.
 2. Apply concrete densifier to deeply saturate floor.
 3. Remove residue of concrete densifier dried on floor surface by grinding with 150-grit metal-bonded diamonds.
 - a. Inform general contractor or construction manager of general protection required of the floor.
 - 1) Immediately remove mortar splatter, spilled liquids, oil, grease, paint, coatings, and other surface contaminants which could adversely affect completed polished concrete floor system.
 - b. Leave the project site; return upon the date set by the architect to complete the floor.
 - 1) Best to return prior to last coat of paint being applied to the walls and before base trim has been installed.

- c. Re-inspect the floors for damage, report all to architect.
- 4. Floor Closure Polishing:
 - a. Remove 150-grit metal-bonded diamond scratches by grinding with 100-grit resin-bonded diamonds.
- 5. Apply concrete sealer.

3.4 FIELD QUALITY CONTROL

- A. Inspect completed polished concrete floor system with Owner, Contractor, Architect, and Installer.
- B. Review procedures with Architect to correct unacceptable areas of completed polished concrete floor system.
- C. Testing: Test the following from completed polished concrete floor system:
 - 1. Static Coefficient of Friction, ASTM C 1028:
 - a. Dry surface.
 - b. Wet surface.
 - 2. Specular Gloss/Reflectance, ASTM D 523:
 - a. 20 degrees.
 - b. 60 degrees.
 - c. 85 degrees.
 - d. 800 grit shine shall be 65 Gloss Units at 60 degrees. Print out test results
 - 3. Floor Surface Profiles, ASTM E 1155:
 - a. Floor Flatness Number (F_F).
 - b. Floor Levelness Number (F_L).
- D. Test Results:
 - 1. Report test results in writing to Owner, Contractor, and Architect within 24 hours after tests.

3.5 PROTECTION

- A. Immediately remove mortar splatter, spilled liquids, oil, grease, paint, coatings, and other surface contaminants which could adversely affect completed polished concrete floor system.
- B. Repair damaged areas of completed polished concrete floor system to satisfaction of Architect.

END OF SECTION 03 3536

SECTION 04 20 00 - UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Concrete masonry units.
2. Lintels.
3. Brick.
4. Structural clay facing tile.
5. Fireplace and chimney lining units.
6. Mortar and grout materials.
7. Reinforcement.
8. Ties and anchors.
9. Embedded flashing.
10. Accessories.
11. Mortar and grout mixes.

B. Products Installed but not Furnished under This Section:

1. Cast-stone trim in unit masonry.
2. Stone trim units in unit masonry.
3. Steel lintels in unit masonry.
4. Steel shelf angles for supporting unit masonry.
5. Cavity wall insulation adhered to masonry backup.

C. Related Requirements:

1. Section 051200 "Structural Steel Framing" for installing anchor sections of adjustable masonry anchors for connecting to structural steel frame.

1.2 ALLOWANCES

- ##### A. See Section 012100 "Allowances" for description of allowances affecting items specified in this Section.

1.3 DEFINITIONS

- ##### A. CMU(s): Concrete masonry unit(s).
- ##### B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.4 ACTION SUBMITTALS

- ##### A. Product Data: For each type of product.

- B. Shop Drawings: For the following:
 - 1. Masonry Units: Indicate sizes, profiles, coursing, and locations of special shapes.
 - 2. Reinforcing Steel: Indicate bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315R.
- C. Samples for Verification: For each type and color of the following:
 - 1. Exposed CMUs.
 - 2. Accessories embedded in masonry.

1.5 INFORMATIONAL SUBMITTALS

- A. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, model numbers, lot numbers, batch numbers, source of supply, and other information as required to identify materials used. Include mix proportions for mortar and grout and source of aggregates.
 - 1. Submittal is for information only. Receipt of list does not constitute approval of deviations from the Contract Documents unless such deviations are specifically brought to the attention of Architect and approved in writing.
- B. Material Certificates: For each type of the following:
 - 1. Masonry units.
 - a. Include data on material properties.
 - b. For brick, include size-variation data verifying that actual range of sizes falls within specified tolerances.
 - c. For exposed brick, include test report for efflorescence in accordance with ASTM C67/C67M.
 - d. For surface-coated brick, include test report for durability of surface appearance after 50 cycles of freezing and thawing in accordance with ASTM C67/C67M.
 - e. For masonry units, include data and calculations establishing average net-area compressive strength of units.
 - 2. Integral water repellent used in CMUs.
 - 3. Cementitious materials. Include name of manufacturer, brand name, and type.
 - 4. Mortar admixtures.
 - 5. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
 - 6. Grout mixes. Include description of type and proportions of ingredients.
 - 7. Reinforcing bars.
 - 8. Joint reinforcement.
 - 9. Anchors, ties, and metal accessories.
- C. Delegated design engineer qualifications.
- D. Mix Designs: For each type of mortar. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test in accordance with ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.
 2. Include test reports, in accordance with ASTM C1019, for grout mixes required to comply with compressive strength requirement.
- E. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined in accordance with TMS 602.
- F. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.6 QUALITY ASSURANCE

- A. Qualifications:
1. Installers: All masonry flashing installers must complete the International Masonry Institute Flashing Upgrade training course.
 2. Testing Agency Qualifications: Qualified in accordance with ASTM C1093 for testing indicated.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.
- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.8 FIELD CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

1. Extend cover a minimum of 24 inches down both sides of walls, and hold cover securely in place.
 2. Where one wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to unconstructed wythe, and hold cover in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
 2. Protect sills, ledges, and projections from mortar droppings.
 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602.
1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.
- E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602.

PART 2 - PRODUCTS

2.1 BASIS OF DESIGN

- A. Buildology, Inc. Albuquerque, NM 505-344-6626 ext.1. CMU style, type, and color: Sandia Sand, burnished finish, in sizes as shown on drawings.
- B. Retain this article to limit sources for the entire Section. Source limitations may also be specified in individual articles if desired.
- C. For exposed masonry units and cementitious mortar components, obtain each color and grade from single source with resources to provide materials of consistent quality in appearance and physical properties.

2.2 UNIT MASONRY, GENERAL

- A. Masonry Standard: Comply with TMS 602, except as modified by requirements in the Contract Documents.
- B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work.
- C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.
 - 1. Where fire-resistance-rated construction is indicated, units are listed by UL or a qualified testing agency acceptable to authorities having jurisdiction.

2.3 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
 - 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
- B. Integral Water Repellent: Provide units made with integral water repellent for exposed units and where indicated.
 - 1. Integral Water Repellent: Liquid polymeric, integral water-repellent admixture that does not reduce flexural bond strength. Units made with integral water repellent, when tested in accordance with ASTM E514/E514M as a wall assembly made with mortar containing integral water-repellent manufacturer's mortar additive, with test period extended to 24 hours, will show no visible water or leaks on the back of test specimen.
- C. Rigid, Cellular Thermal Insulation Units: Where indicated, units contain rigid, specially shaped, molded-polystyrene insulation units complying with ASTM C578, Type I, designed for installing in cores of masonry units.
- D. CMUs: ASTM C90, normal weight.
 - 1. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
 - 2. Exposed Faces: Provide color and texture matching the range represented by Architect's sample.

2.4 LINTELS

- A. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs matching adjacent CMUs in color, texture, and density classification, with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

2.5 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C150/C150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
 - 1. Alkali content will not be more than 0.1 percent when tested in accordance with ASTM C114.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- D. Masonry Cement: ASTM C91/C91M.
- E. Mortar Cement: ASTM C1329/C1329M.
- F. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C979/C979M. Use only pigments with a record of satisfactory performance in masonry mortar.
- G. Colored Cement Products: Packaged blend made from portland cement and hydrated lime or masonry cement and mortar pigments, all complying with specified requirements, and containing no other ingredients.
 - 1. Formulate blend as required to produce color indicated or, if not indicated, as selected from manufacturer's standard colors.
 - 2. Pigments do not exceed 10 percent of portland cement by weight.
- H. Preblended Dry Mortar Mix: Packaged blend made from portland cement and hydrated lime or mortar cement, sand, mortar pigments, water repellents, and admixtures and complying with ASTM C1714/C1714M.
- I. Aggregate for Mortar: ASTM C144.
 - 1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
 - 2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
 - 3. White-Mortar Aggregates: Natural white sand or crushed white stone.
 - 4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
- J. Aggregate for Grout: ASTM C404.
- K. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C494/C494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.

- L. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with CMUs containing integral water repellent from same manufacturer.
- M. Water: Potable.

2.6 REINFORCEMENT

- A. Uncoated-Steel Reinforcing Bars: ASTM A615/A615M or ASTM A996/A996M, Grade 60.
- B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in center of cells. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.
- C. Masonry-Joint Reinforcement, General: ASTM A951/A951M.
 - 1. Interior Walls: Hot-dip galvanized carbon steel.
 - 2. Exterior Walls: Hot-dip galvanized carbon steel.
 - 3. Wire Size for Side Rods: 0.187-inch diameter.
 - 4. Wire Size for Cross Rods: 0.187-inch diameter.
- D. Masonry-Joint Reinforcement for Single-Wythe Masonry: Ladder type with single pair of side rods.
- E. Masonry-Joint Reinforcement for Veneers Anchored with Seismic Masonry-Veneer Anchors: Single 0.187-inch-diameter, hot-dip galvanized carbon steel continuous wire.

2.7 ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.
- B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D2000, Designation M2AA-805 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
- C. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D226/D226M, Type I (No. 15 asphalt felt).

2.8 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
 - 1. Do not use calcium chloride in mortar or grout.
 - 2. Use portland cement-lime mortar unless otherwise indicated.
 - 3. For exterior masonry, use portland cement-lime mortar.
 - 4. For reinforced masonry, use portland cement-lime mortar.

5. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Colored-Aggregate Mortar: Produce required mortar color by using colored aggregates and natural color or white cement as necessary to produce required mortar color.
 1. Mix to match Architect's sample.
- D. Grout for Unit Masonry: Comply with ASTM C476.
 1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602 for dimensions of grout spaces and pour height.
 2. Proportion grout in accordance with ASTM C476, Table 1.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
 2. Verify that foundations are within tolerances specified.
 3. Verify that reinforcing dowels are properly placed.
 4. Verify that substrates are free of substances that impair mortar bond.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
- B. Build chases and recesses to accommodate items specified in this and other Sections.
- C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.
- D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp,

unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

- E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.
- F. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.
- G. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. per minute when tested in accordance with ASTM C67/C67M. Allow units to absorb water so they are damp but not wet at time of laying.

3.3 TOLERANCES

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch.
2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 ft., or 1/2-inch maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 ft., 1/4 inch in 20 ft., or 1/2-inch maximum.
3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 ft., 3/8 inch in 20 ft., or 1/2-inch maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 ft., 1/4 inch in 20 ft., or 1/2-inch maximum.
5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 ft., 3/8 inch in 20 ft., or 1/2-inch maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 ft., or 1/2-inch maximum.
7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.

4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.
5. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2 inches. Bond and interlock each course of each wythe at corners. Do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.
- D. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- F. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.
- G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below, and rod mortar or grout into core.
- H. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

3.5 MORTAR BEDDING AND JOINTING

- A. Lay CMUs as follows:
 1. Bed face shells in mortar and make head joints of depth equal to bed joints.
 2. Bed webs in mortar in all courses of piers, columns, and pilasters.
 3. Bed webs in mortar in grouted masonry, including starting course on footings.
 4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.
 5. Fully bed units and fill cells with mortar at anchors and ties as needed to fully embed anchors and ties in mortar.

3.6 MASONRY-JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.
- B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.

3.7 CONTROL AND EXPANSION JOINTS

- A. General: Install control- and expansion-joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
- B. Form control joints in concrete masonry as follows:
 - 1. Install preformed control-joint gaskets designed to fit standard sash block.

3.8 LINTELS

- A. Install steel lintels where indicated.
- B. Provide masonry lintels where indicated and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are indicated without structural steel or other supporting lintels.
- C. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

3.9 REINFORCED UNIT MASONRY

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
 - 1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
 - 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and that of other loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in TMS 602.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
 - 1. Comply with requirements in TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.

3.10 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements will be at Contractor's expense.
- B. Inspections: Special inspections in accordance with Level 2 in TMS 402.
 - 1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
 - 2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
 - 3. Place grout only after inspectors have verified proportions of site-prepared grout.
- C. Testing Prior to Construction: One set of tests.
- D. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.
- E. Concrete Masonry Unit Test: For each type of unit provided, in accordance with ASTM C140/C140M for compressive strength.
- F. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, in accordance with ASTM C780.
- G. Mortar Test (Property Specification): For each mix provided, in accordance with ASTM C780. Test mortar for compressive strength.
- H. Grout Test (Compressive Strength): For each mix provided, in accordance with ASTM C1019.
- I. Prism Test: For each type of construction provided, in accordance with ASTM C1314 at 28 days.

3.11 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.

2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
3. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
4. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.

END OF SECTION 04 20 00

SECTION 05 12 00 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Structural-steel materials.
2. Shrinkage-resistant grout.
3. Prefabricated building columns.
4. Shear stud connectors.

B. Related Requirements:

1. Section 053100 "Steel Decking" for field installation of shear stud connectors through deck.

1.2 DEFINITIONS

A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in ANSI/AISC 303.

B. Heavy Sections: Rolled and built-up sections as follows:

1. Shapes included in ASTM A6/A6M with flanges thicker than 1-1/2 inches.
2. Welded built-up members with plates thicker than 2 inches.
3. Column base plates thicker than 2 inches.

C. Protected Zone: Structural members or portions of structural members indicated as "protected zone" on Drawings. Connections of structural and nonstructural elements to protected zones are limited.

1.3 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

1.4 ACTION SUBMITTALS

A. Product Data:

1. Structural-steel materials.
2. High-strength, bolt-nut-washer assemblies.
3. Shear stud connectors.
4. Anchor rods.
5. Threaded rods.
6. Shop primer.
7. Galvanized-steel primer.
8. Galvanized repair paint.
9. Shrinkage-resistant grout.

B. Shop Drawings: Show fabrication of structural-steel components.

1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
2. Include embedment Drawings.
3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.

1.5 INFORMATIONAL SUBMITTALS

- A. Welding certificates.
- B. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.
- C. Mill test reports for structural-steel materials, including chemical and physical properties.
- D. Product Test Reports: For the following:
 1. Bolts, nuts, and washers, including mechanical properties and chemical analysis.
- E. Field quality-control reports.

1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category BU or is accredited by the IAS Fabricator Inspection Program for Structural Steel (Acceptance Criteria 172).
 1. In lieu of participation in the AISC Quality Certification Program or AISC-Certified, the fabricator/erector may employ the services of an approved independent qualified inspector for structural steel. Inspector qualifications and special inspections shall conform to the requirements of the International Building Code, Chapter 17 and shall be in accordance with AWS D1.1.
- B. Installer Qualifications: A qualified Installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category ACSE.

1. In lieu of participation in the AISC Quality Certification Program or AISC-Certified, the fabricator/erector may employ the services of an approved independent qualified inspector for structural steel. Inspector qualifications and special inspections shall conform to the requirements of the International Building Code, Chapter 17 and shall be in accordance with AWS D1.1.
- C. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.1/D1.1M.
1. Welders and welding operators performing work on bottom-flange, demand-critical welds are to pass the supplemental welder qualification testing, as required by AWS D1.8/D1.8M. FCAW-S and FCAW-G are to be considered separate processes for welding personnel qualification.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.
1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.
- B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.
1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
 2. Clean and relubricate bolts and nuts that become dry or rusty before use.
 3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F3125/F3125M, Grade F1852 bolt assemblies and for retesting bolt assemblies after lubrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Comply with applicable provisions of the following specifications and documents:
1. ANSI/AISC 303.
 2. ANSI/AISC 341.
 3. ANSI/AISC 360.
 4. RCSC's "Specification for Structural Joints Using High-Strength Bolts."
- B. Connection Design Information:
1. Option 1: Connection designs have been completed and connections indicated on the Drawings.

2.2 STRUCTURAL-STEEL MATERIALS

- A. W-Shapes: ASTM A992/A992M.
- B. Channels, Angles, M-Shapes: ASTM A36/A36M.
- C. Channels, Angles, S-Shapes: ASTM A36/A36M.
- D. Plate and Bar: ASTM A36/A36M.
- E. Corrosion-Resisting (Weathering) Structural-Steel Shapes, Plates, and Bars: ASTM A588/A588M, 50 ksi.
- F. Cold-Formed Hollow Structural Sections: ASTM A500/A500M, Grade B structural tubing.
- G. Corrosion-Resisting (Weathering), Cold-Formed Hollow Structural Sections: ASTM A847/A847M structural tubing.
- H. Steel Pipe: ASTM A53/A53M, Type E or Type S, Grade B.
 - 1. Finish: Black except where indicated to be galvanized.
- I. Steel Castings: ASTM A216/A216M, Grade WCB, with supplementary requirement S11.
- J. Steel Forgings: ASTM A668/A668M.
- K. Welding Electrodes: Comply with AWS requirements.

2.3 BOLTS AND CONNECTORS

- A. High-Strength A325 Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A325, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers; all with plain finish.
- B. High-Strength A490 Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A490, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers; all with plain finish.
- C. Zinc-Coated High-Strength A325 Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A325, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers.
 - 1. Finish: Hot-dip or mechanically deposited zinc coating.
 - 2. Direct-Tension Indicators: ASTM F959/F959M, Type 325-1, compressible-washer type with mechanically deposited zinc coating, baked epoxy-coated finish.
- D. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F3125/F3125M, Grade F1852, Type 1, heavy-hex head assemblies, consisting of steel structural bolts with splined ends; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers.
 - 1. Finish: Mechanically deposited zinc coating.

2.4 RODS

- A. Unheaded Anchor Rods: ASTM F1554, Grade 36.
 - 1. Configuration: Straight.
 - 2. Nuts: ASTM A563 heavy-hex carbon steel.
 - 3. Plate Washers: ASTM A36/A36M carbon steel.
 - 4. Washers: ASTM F436, Type 1, hardened carbon steel.
 - 5. Finish: Mechanically deposited zinc coating, ASTM B695, Class 50.
- B. Headed Anchor Rods: ASTM F1554, Grade 36, straight.
 - 1. Nuts: ASTM A563 heavy-hex carbon steel.
 - 2. Plate Washers: ASTM A36/A36M carbon steel.
 - 3. Washers: ASTM F436, Type 1, hardened carbon steel.
 - 4. Finish: Mechanically deposited zinc coating, ASTM B695, Class 50.
- C. Threaded Rods: ASTM A36/A36M.
 - 1. Nuts: ASTM A63 heavy-hex carbon steel.
 - 2. Washers: ASTM F436, Type 1, hardened carbon steel.
 - 3. Finish: Mechanically deposited zinc coating, ASTM B695, Class 50.

2.5 FORGED-STEEL STRUCTURAL HARDWARE

- A. Clevises and Turnbuckles: Made from cold-finished carbon-steel bars, ASTM A108, AISI C-1035.
- B. Eye Bolts and Nuts: Made from cold-finished carbon-steel bars, ASTM A108, AISI C-1030.
- C. Sleeve Nuts: Made from cold-finished carbon-steel bars, ASTM A108, AISI C-1018.

2.6 PRIMER

- A. Steel Primer:
 - 1. SSPC-Paint 23, latex primer.
 - 2. Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.

2.7 SHRINKAGE-RESISTANT GROUT

- A. Metallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, metallic aggregate grout, mixed with water to consistency suitable for application and a 30-minute working time.
- B. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.8 FABRICATION

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate in accordance with ANSI/AISC 303 and to ANSI/AISC 360.
 - 1. Camber structural-steel members where indicated.
 - 2. Fabricate beams with rolling camber up.
 - 3. Identify high-strength structural steel in accordance with ASTM A6/A6M and maintain markings until structural-steel framing has been erected.
 - 4. Mark and match-mark materials for field assembly.
 - 5. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.
- B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
 - 1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.
- C. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.
- D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.
- E. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel members.
 - 1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
 - 2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
 - 3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.9 GALVANIZING

- A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel in accordance with ASTM A123/A123M.
 - 1. Fill vent and drain holes that are exposed in the finished Work unless they function as weep holes, by plugging with zinc solder and filing off smooth.

2.10 SHOP PRIMING

- A. Shop prime steel surfaces, except the following:
 - 1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
 - 2. Surfaces to be field welded.
 - 3. Surfaces of high-strength bolted, slip-critical connections.
 - 4. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
 - 5. Galvanized surfaces.
 - 6. Corrosion-resisting (weathering) steel surfaces.

7. Surfaces enclosed in interior construction.
- B. Surface Preparation of Steel: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces in accordance with the following specifications and standards:
 1. SSPC-SP 3.
- C. Surface Preparation of Galvanized Steel: Prepare galvanized-steel surfaces for shop priming by thoroughly cleaning steel of grease, dirt, oil, flux, and other foreign matter, and treating with etching cleaner.
- D. Priming: Immediately after surface preparation, apply primer in accordance with manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
 1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
 2. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

2.11 SOURCE QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform shop tests and inspections.
 1. Allow testing agency access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
 2. Bolted Connections: Inspect shop-bolted connections in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
 3. Welded Connections: Visually inspect shop-welded connections in accordance with AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
 - a. Liquid Penetrant Inspection: ASTM E165/E165M.
 - b. Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
 - c. Ultrasonic Inspection: ASTM E164.
 - d. Radiographic Inspection: ASTM E94/E94M.
 4. In addition to visual inspection, test and inspect shop-welded shear stud connectors in accordance with requirements in AWS D1.1/D1.1M for stud welding and as follows:
 - a. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear stud connector.
 - b. Conduct tests in accordance with requirements in AWS D1.1/D1.1M on additional shear stud connectors if weld fracture occurs on shear stud connectors already tested.
 5. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.
 - 1. Prepare a certified survey of existing conditions. Include bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated on Drawings.
 - 1. Do not remove temporary shoring supporting composite deck construction and structural-steel framing until cast-in-place concrete has attained its design compressive strength.

3.3 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and in accordance with ANSI/AISC 303 and ANSI/AISC 360.
- B. Baseplates, Bearing Plates, and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
 - 1. Set plates for structural members on wedges, shims, or setting nuts as required.
 - 2. Weld plate washers to top of baseplate.
 - 3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
 - 4. Promptly pack shrinkage-resistant grout solidly between bearing surfaces and plates, so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for grouting.
- C. Maintain erection tolerances of structural steel within ANSI/AISC 303.
- D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that are in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure. Slope roof framing members to slopes indicated on Drawings.
 2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.
- E. Splice members only where indicated.
- F. Do not use thermal cutting during erection.
- G. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

3.4 FIELD CONNECTIONS

- A. High-Strength Bolts: Install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for bolt and joint type specified.
1. Joint Type: Snug tightened.
- B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
1. Comply with ANSI/AISC 303 and ANSI/AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
 2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
 3. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in ANSI/AISC 303 for mill material.
- C. Shear Stud Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Weld using end welding of headed-stud shear connectors in accordance with AWS D1.1/D1.1M and manufacturer's written instructions.

3.5 INSTALLATION OF PREFABRICATED BUILDING COLUMNS

- A. Install prefabricated building columns to comply with ANSI/AISC 360, manufacturer's written recommendations, and requirements of testing and inspecting agency that apply to the fire-resistance rating indicated.

3.6 REPAIR

- A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing, and repair galvanizing to comply with ASTM A780/A780M.
- B. Touchup Painting:
1. Immediately after erection, clean exposed areas where primer is damaged or missing, and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

- a. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.
- C. Touchup Priming: Cleaning and touchup priming are specified in Section 099600 "High-Performance Coatings."

3.7 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a special inspector to perform the following special inspections:
 1. Verify structural-steel materials and inspect steel frame joint details.
 2. Verify weld materials and inspect welds.
 3. Verify connection materials and inspect high-strength bolted connections.
- B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
 1. Bolted Connections: Inspect bolted connections in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
 2. Welded Connections: Visually inspect field welds in accordance with AWS D1.1/D1.1M.
 - a. In addition to visual inspection, test and inspect field welds in accordance with AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
 - 1) Liquid Penetrant Inspection: ASTM E165/E165M.
 - 2) Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
 - 3) Ultrasonic Inspection: ASTM E164.
 - 4) Radiographic Inspection: ASTM E94/E94M.
 3. Shear Stud Connectors: In addition to visual inspection, test and inspect field-welded shear connectors according to requirements in AWS D1.1/D1.1M for stud welding and as follows:
 - a. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
 - b. Conduct tests according to requirements in AWS D1.1/D1.1M on additional shear connectors if weld fracture occurs on shear connectors already tested.

END OF SECTION 05 12 00

SECTION 05 21 00 - STEEL JOIST FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. K-series steel joists.
2. KCS-type K-series steel joists.
3. K-series steel joist substitutes.
4. LH-series long-span steel joists.
5. DLH-series long-span steel joists.
6. CJ-series composite steel joists.
7. Steel joist girders.
8. Steel joist accessories.

B. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete" for installing bearing plates in concrete.
2. Section 042000 "Unit Masonry" for installing bearing plates in unit masonry.
3. Section 051200 "Structural Steel Framing" for field-welded shear connectors.

1.2 DEFINITIONS

- A. SJI's "Specifications": Steel Joist Institute's "Standard Specifications, Load Tables and Weight Tables for Steel Joists and Joist Girders."
- B. Special Joists: Steel joists or joist girders requiring modification by manufacturer to support nonuniform, unequal, or special loading conditions that invalidate load tables in SJI's "Specifications."

1.3 ACTION SUBMITTALS

A. Product Data: For each type of joist, accessory, and product.

B. Shop Drawings:

1. Include layout, designation, number, type, location, and spacing of joists.
2. Include joining and anchorage details; bracing, bridging, and joist accessories; splice and connection locations and details; and attachments to other construction.
3. Indicate locations and details of bearing plates to be embedded in other construction.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer.

- B. Welding certificates.
- C. Manufacturer certificates.
- D. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.
- E. Mill Certificates: For each type of bolt.
- F. Comprehensive engineering analysis of special joists signed and sealed by the qualified professional engineer responsible for its preparation.
- G. Field quality-control reports.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A manufacturer certified by SJI to manufacture joists complying with applicable standard specifications and load tables in SJI's "Specifications."
 - 1. Manufacturer's responsibilities include providing professional engineering services for designing special joists to comply with performance requirements.
- B. Welding Qualifications: Qualify field-welding procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle joists as recommended in SJI's "Specifications."
- B. Protect joists from corrosion, deformation, and other damage during delivery, storage, and handling.

1.7 SEQUENCING

- A. Deliver steel bearing plates to be built into masonry construction.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide special joists and connections capable of withstanding design loads indicated on Drawings.
 - 1. Use ASD; data are given at service-load level.
 - 2. Design special joists to withstand design loads with live-load deflections no greater than the following:
 - a. Roof Joists: Vertical deflection of 1/360 of the span.

2.2 STEEL JOISTS

- A. K-Series Steel Joist: Manufactured steel joists of type indicated according to "Standard Specification for Open Web Steel Joists, K-Series" in SJI's "Specifications," with steel-angle top- and bottom-chord members, underslung ends, and parallel top chord.
1. Joist Type: K-series steel joists.
 2. K-Series Steel Joist Substitutes: Manufacture according to "Standard Specifications for Open Web Steel Joists, K-Series" in SJI's "Specifications," with steel-angle or -channel members.
 3. Provide holes in chord members for connecting and securing other construction to joists.
 4. Top-Chord Extensions: Extend top chords of joists with SJI's Type S top-chord extensions where indicated on Drawings, complying with SJI's "Specifications."
 5. Extended Ends: Extend bearing ends of joists with SJI's Type R extended ends where indicated on Drawings, complying with SJI's "Specifications."
 6. Do not camber joists.
 7. Equip bearing ends of joists with manufacturer's standard beveled ends or sloped shoes if joist slope exceeds 1/4 inch per 12 inches.

2.3 PRIMERS

- A. Primer:
1. SSPC-Paint 15, or manufacturer's standard shop primer complying with performance requirements in SSPC-Paint 15.

2.4 STEEL JOIST ACCESSORIES

- A. Bridging:
1. Provide bridging anchors and number of rows of horizontal or diagonal bridging of material, size, and type required by SJI's "Specifications" for type of joist, chord size, spacing, and span. Furnish additional erection bridging if required for stability.
 2. Schematically indicated. Detail and fabricate according to SJI's "Specifications." Furnish additional erection bridging if required for stability.
 3. Fabricate as indicated on Drawings and according to SJI's "Specifications." Furnish additional erection bridging if required for stability.
- B. Fabricate steel bearing plates from ASTM A36/A36M steel with integral anchorages of sizes and thicknesses indicated on Drawings. Shop prime paint.
- C. Steel bearing plates with integral anchorages are specified in Section 055000 "Metal Fabrications."
- D. Furnish ceiling extensions, either extended bottom-chord elements or a separate extension unit of enough strength to support ceiling construction.
1. Extend ends to within 1/2 inch of finished wall surface unless otherwise indicated on Drawings.

2. Finish: Plain, uncoated.
- E. High-Strength Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A325, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers.
 1. Finish: Mechanically deposited zinc coating, ASTM B695, Class 50.
- F. Welding Electrodes: Comply with AWS standards.
- G. Furnish miscellaneous accessories including splice plates and bolts required by joist manufacturer to complete joist assembly.

2.5 CLEANING AND SHOP PAINTING

- A. Clean and remove loose scale, heavy rust, and other foreign materials from fabricated joists and accessories by hand-tool cleaning, SSPC-SP 2.
- B. Apply one coat of shop primer to joists and joist accessories to be primed to provide a continuous, dry paint film not less than 1 mil thick.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine supporting substrates, embedded bearing plates, and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Do not install joists until supporting construction is in place and secured.
- B. Install joists and accessories plumb, square, and true to line; securely fasten to supporting construction according to SJI's "Specifications," joist manufacturer's written instructions, and requirements in this Section.
 1. Before installation, splice joists delivered to Project site in more than one piece.
 2. Space, adjust, and align joists accurately in location before permanently fastening.
 3. Install temporary bracing and erection bridging, connections, and anchors to ensure that joists are stabilized during construction.
 4. Delay rigidly connecting bottom-chord extensions to columns or supports until dead loads are applied.
- C. Field weld joists to supporting steel bearing plates and framework. Coordinate welding sequence and procedure with placement of joists. Comply with AWS requirements and

procedures for welding, appearance and quality of welds, and methods used in correcting welding work.

- D. Install and connect bridging concurrently with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords if terminating at walls or beams.

3.3 REPAIRS

- A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A780/A780M and manufacturer's written instructions.
- B. Touchup Painting:
 - 1. Immediately after installation, clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted joists, bearing plates, abutting structural steel, and accessories.
 - a. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.
 - b. Apply a compatible primer of same type as primer used on adjacent surfaces.

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Visually inspect field welds according to AWS D1.1/D1.1M.
- C. Visually inspect bolted connections.
- D. Prepare test and inspection reports.

END OF SECTION 05 21 00

SECTION 05 31 00 - STEEL DECKING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Roof deck.
2. Acoustical roof deck.

B. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete" for normal-weight and lightweight structural concrete fill over steel deck.
2. Section 051200 "Structural Steel Framing" for shop- and field-welded shear connectors.

1.2 ACTION SUBMITTALS

A. Product Data:

1. Roof deck.
2. Acoustical roof deck.

B. Shop Drawings:

1. Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

1.3 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Product Certificates: For each type of steel deck.

C. Test and Evaluation Reports:

1. Product Test Reports: For tests performed by a qualified testing agency, indicating that each of the following complies with requirements:
 - a. Power-actuated mechanical fasteners.
 - b. Acoustical roof deck.
2. Research Reports: For steel deck, from ICC-ES showing compliance with the building code.

D. Field Quality-Control Submittals:

1. Field quality-control reports.

E. Qualification Statements: For welding personnel.

1.4 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel in accordance with SDI QA/QC and the following welding codes:

1. AWS D1.1/D1.1M.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Store products in accordance with SDI MOC3. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

1. Protect and ventilate acoustical cellular roof deck with factory-installed insulation to maintain insulation free of moisture.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. AISI Specifications: Comply with calculated structural characteristics of steel deck in accordance with AISI S100.

B. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from listings of another qualified testing agency.

2.2 ROOF DECK

A. Fabrication of Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with SDI RD and with the following:

1. Galvanized- and Shop-Primed Steel Sheet: ASTM A653/A653M, Structural Steel (SS), Grade 33, G60 zinc coating; cleaned, pretreated, and primed with manufacturer's standard baked-on, rust-inhibitive primer.

a. Color: As Indicated.

2. Deck Profile: As indicated.

3. Profile Depth: As indicated.

4. Design Uncoated-Steel Thickness: As indicated.
5. Design Uncoated-Steel Thicknesses; Deck Unit/Bottom Plate: As indicated.
6. Span Condition: As indicated.
7. Side Laps: Overlapped .

2.3 ACOUSTICAL ROOF DECK

- A. Fabrication of Acoustical Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with SDI RD and with the following:
 1. Galvanized- and Shop-Primed Steel Sheet: ASTM A653/A653M, Structural Steel (SS), Grade 33, G60 zinc coating; cleaned, pretreated, and primed with manufacturer's standard baked-on, rust-inhibitive primer.
 - a. Color: As indicated.
 2. Deck Profile: As indicated.
 3. Cellular Deck Profile: As indicated, with bottom plate.
 4. Profile Depth: As indicated.
 5. Design Uncoated-Steel Thickness: As indicated.
 6. Design Uncoated-Steel Thicknesses; Deck Unit/Bottom Plate: As indicated.
 7. Span Condition: As indicated.
 8. Side Laps: Interlocking seam.
 9. Acoustical Perforations: Deck units with manufacturer's standard perforated vertical webs.
 10. Sound-Absorbing Insulation: Manufacturer's standard premolded roll or strip of glass or mineral fiber..
 - a. Factory install sound-absorbing insulation into cells of cellular deck.
 11. Acoustical Performance: NRC 0.65, tested in accordance with ASTM C423.

2.4 ACCESSORIES

- A. Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.
- B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.
- C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.
- D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.
- E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.
- F. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck unless otherwise indicated.

- G. Weld Washers: Uncoated steel sheet, shaped to fit deck rib, 0.0598 inch thick, with factory-punched hole of 3/8-inch minimum diameter.
- H. Galvanizing Repair Paint: ASTM A780/A780M.
- I. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Install deck panels and accessories in accordance with SDI C, SDI NC, and SDI RD, as applicable; manufacturer's written instructions; and requirements in this Section.
- B. Install temporary shoring before placing deck panels if required to meet deflection limitations.
- C. Locate deck bundles to prevent overloading of supporting members.
- D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.
 - 1. Align cellular deck panels over full length of cell runs and align cells at ends of abutting panels.
- E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.
- F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.
- G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.
- H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.
- I. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install in accordance with deck manufacturer's written instructions.

3.3 INSTALLATION OF ROOF DECK

- A. Fasten roof-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated or arc seam welds with an equal perimeter that is not less than 1-1/2 inches long, and as follows:
 - 1. Weld Diameter: 5/8 inch, nominal.
 - 2. Weld Spacing: Weld edge and interior ribs of deck units with a minimum of two welds per deck unit at each support. Space welds as indicated.
 - 3. Weld Washers: Install weld washers at each weld location.
- B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of one-half of the span or 18 inches, and as follows:
 - 1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.
 - 2. Mechanically clinch or button punch.
 - 3. Fasten with a minimum of 1-1/2-inch-long welds.
- C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:
 - 1. End Joints: Lapped 2 inches minimum.
- D. Miscellaneous Roof-Deck Accessories: Install ridge and valley plates, finish strips, end closures, and reinforcing channels in accordance with deck manufacturer's written instructions. Weld or mechanically fasten to substrate to provide a complete deck installation.
 - 1. Weld cover plates at changes in direction of roof-deck panels unless otherwise indicated.

3.4 REPAIR

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint in accordance with ASTM A780/A780M and manufacturer's written instructions.
- B. Repair Painting:
 - 1. Wire brush and clean rust spots, welds, and abraded areas on both surfaces of prime-painted deck immediately after installation, and apply repair paint.
 - 2. Apply repair paint, of same color as adjacent shop-primed deck, to bottom surfaces of deck exposed to view.
 - 3. Wire brushing, cleaning, and repair painting of bottom deck surfaces are included in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."
 - 4. Wire brushing, cleaning, and repair painting of rust spots, welds, and abraded areas of both deck surfaces are included in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Tests and Inspections:
 - 1. Special inspections and qualification of welding special inspectors for cold-formed steel floor and roof deck in accordance with quality-assurance inspection requirements of SDI QA/QC.
 - a. Field welds will be subject to inspection.
 - 2. Steel decking will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

END OF SECTION 05 31 00

SECTION 05 40 00 - COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Load-bearing wall framing.
2. Exterior non-load-bearing wall framing.

1.2 ACTION SUBMITTALS

A. Product Data: For the following:

1. Cold-formed steel framing materials.
2. Load-bearing wall framing.
3. Vertical deflection clips.
4. Drift clips.
5. Post-installed anchors.
6. Power-actuated anchors.

B. Shop Drawings:

1. Include layout, spacings, sizes, thicknesses, and types of cold-formed steel framing; fabrication; and fastening and anchorage details, including mechanical fasteners.
2. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Welding certificates.

C. Product Certificates: For each type of code-compliance certification for studs and tracks.

D. Product Test Reports: For each listed product, for tests performed by manufacturer and witnessed by a qualified testing agency.

1. Expansion anchors.
2. Power-actuated anchors.
3. Mechanical fasteners.
4. Vertical deflection clips.
5. Horizontal drift deflection clips
6. Miscellaneous structural clips and accessories.

E. Research Reports:

1. For nonstandard cold-formed steel framing post-installed anchors and power-actuated fasteners, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.
2. For sill sealer gasket/termite barrier, showing compliance with ICC-ES AC380.

1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to ASTM E329 for testing indicated.
- B. Product Tests: Mill certificates or data from a qualified independent testing agency indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.
- C. Welding Qualifications: Qualify procedures and personnel according to the following:
1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
 2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect and store cold-formed steel framing from corrosion, moisture staining, deformation, and other damage during delivery, storage, and handling as required in AISI S202.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency acceptable to authorities having jurisdiction.

2.2 COLD-FORMED STEEL FRAMING MATERIALS

- A. Framing Members, General: Comply with AISI S200 and ASTM C955, Section 8 for conditions indicated.
- B. Steel Sheet: ASTM A1003/A1003M, Structural Grade, Type H, metallic coated, of grade and coating designation as follows:
1. Grade: ST33H.
 2. Coating: G60, A60, AZ50, or GF30.

2.3 LOAD-BEARING WALL FRAMING

- A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:
 - 1. Minimum Base-Metal Thickness: As indicated.
 - 2. Flange Width: As indicated.
 - 3. Section Properties: In accordance with AISI, as indicated.
- B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with straight flanges, and as follows:
 - 1. Minimum Base-Metal Thickness: As indicated.
 - 2. Flange Width: As indicated.
- C. Steel Box or Back-to-Back Headers: Manufacturer's standard C-shapes used to form header beams, of web depths indicated, unpunched, with stiffened flanges, and as follows:
 - 1. Minimum Base-Metal Thickness: As indicated.
 - 2. Flange Width: As indicated.
 - 3. Section Properties: In accordance with AISI, as indicated.

2.4 FRAMING ACCESSORIES

- A. Fabricate steel-framing accessories from ASTM A1003/A1003M, Structural Grade, Type H, metallic coated steel sheet, of same grade and coating designation used for framing members.
- B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:
 - 1. Supplementary framing.
 - 2. Bracing, bridging, and solid blocking.
 - 3. Web stiffeners.
 - 4. Anchor clips.
 - 5. End clips.
 - 6. Foundation clips.
 - 7. Gusset plates.
 - 8. Stud kickers and knee braces.
 - 9. Joist hangers and end closures.
 - 10. Hole-reinforcing plates.
 - 11. Backer plates.

2.5 ANCHORS, CLIPS, AND FASTENERS

- A. Steel Shapes and Clips: ASTM A36/A36M, zinc coated by hot-dip process according to ASTM A123/A123M.

- B. Anchor Bolts: ASTM F1554, Grade 36, threaded carbon-steel carbon-steel nuts, and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A153/A153M, Class C.
- C. Post-Installed Anchors: Fastener systems with bolts of same basic metal as fastened metal, if visible, unless otherwise indicated; with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01 as appropriate for the substrate.
 - 1. Uses: Securing cold-formed steel framing to structure.
 - 2. Type: Torque-controlled expansion anchor or adhesive anchor.
 - 3. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941, Class Fe/Zn 5, unless otherwise indicated.
- D. Power-Actuated Anchors: Fastener systems with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- E. Mechanical Fasteners: ASTM C1513, corrosion-resistant-coated, self-drilling, self-tapping, steel drill screws.
 - 1. Head Type: Low-profile head beneath sheathing; manufacturer's standard elsewhere.
- F. Welding Electrodes: Comply with AWS standards.

2.6 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: ASTM A780/A780M.
- B. Cement Grout: Portland cement, ASTM C150/C150M, Type I; and clean, natural sand, ASTM C404. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.
- C. Nonmetallic, Nonshrink Grout: Factory-packaged, nonmetallic, noncorrosive, nonstaining grout, complying with ASTM C1107/C1107M, and with a fluid consistency and 30-minute working time.
- D. Shims: Load-bearing, high-density, multimonomer, nonleaching plastic; or cold-formed steel of same grade and metallic coating as framing members supported by shims.
- E. Sill Sealer Gasket: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members as required.
- F. Sill Sealer Gasket/Termite Barrier: Minimum 68-mil nominal thickness, self-adhering sheet consisting of 64 mils of rubberized asphalt laminated on one side to a 4-mil-thick, polyethylene-film reinforcement, and with release liner on adhesive side.
 - 1. Physical Properties:
 - a. Peel Adhesion: 17.0 lb/in of width when tested in accordance with ASTM D412.

- b. Low-Temperature Flexibility: Pass at minus 25 deg F when tested in accordance with ASTM D146/D146M.
- c. Water Vapor Permeance: 0.05 perm maximum when tested in accordance with ASTM E96/E96M, Method B.
- d. Resistance to Termite Penetration: Comply with ICC-ES AC380.

2.7 FABRICATION

- A. Fabricate cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.
 - 1. Fabricate framing assemblies using jigs or templates.
 - 2. Cut framing members by sawing or shearing; do not torch cut.
 - 3. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, pneumatic pin fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.
 - a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
 - b. Locate mechanical fasteners and install according to Shop Drawings, with screws penetrating joined members by no fewer than three exposed screw threads.
 - 4. Fasten other materials to cold-formed steel framing by welding, bolting, pneumatic pin fastening, or screw fastening, according to Shop Drawings.
- B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies by means that prevent damage or permanent distortion.
- C. Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable variation of 1/8 inch in 10 feet and as follows:
 - 1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error are not to exceed minimum fastening requirements of sheathing or other finishing materials.
 - 2. Squareness: Fabricate each cold-formed steel framing assembly to a maximum out-of-square tolerance of 1/8 inch.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, conditions, and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Before sprayed fire-resistive materials are applied, attach continuous angles, supplementary framing, or tracks to structural members indicated to receive sprayed fire-resistive materials.
- B. After applying sprayed fire-resistive materials, remove only as much of these materials as needed to complete installation of cold-formed framing without reducing thickness of fire-resistive materials below that required to obtain fire-resistance ratings indicated. Protect remaining fire-resistive materials from damage.
- C. Install load-bearing shims or grout between the underside of load-bearing wall bottom track and the top of foundation wall or slab at locations with a gap larger than 1/4 inch to ensure a uniform bearing surface on supporting concrete or masonry construction.
- D. Install sill sealer gasket at the underside of wall bottom track or rim track and at the top of foundation wall or slab at stud or joist locations.
- E. Install sill sealer gasket/termite barrier in accordance with manufacturer's written instructions at the underside of wall bottom track or rim track and at the top of foundation wall or slab at stud or joist locations.

3.3 INSTALLATION, GENERAL

- A. Cold-formed steel framing may be shop or field fabricated for installation, or it may be field assembled.
- B. Install cold-formed steel framing according to AISI S200, AISI S202, and manufacturer's written instructions unless more stringent requirements are indicated.
- C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.
 - 1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch.
- D. Install cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened.
 - 1. Cut framing members by sawing or shearing; do not torch cut.
 - 2. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.
 - a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
 - b. Locate mechanical fasteners, install according to Shop Drawings, and comply with requirements for spacing, edge distances, and screw penetration.
- E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.

- F. Install temporary bracing and supports to secure framing and support loads equal to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
- G. Do not bridge building expansion joints with cold-formed steel framing. Independently frame both sides of joints.
- H. Install insulation, specified in Section 072100 "Thermal Insulation," in framing-assembly members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.
- I. Fasten hole-reinforcing plate over web penetrations that exceed size of manufacturer's approved or standard punched openings.

3.4 INSTALLATION OF LOAD-BEARING WALL FRAMING

- A. Install continuous top and bottom tracks sized to match studs. Align tracks accurately and securely anchor at corners and ends, and at spacings as follows:
 - 1. Anchor Spacing: 32 inches.
- B. Squarely seat studs against top and bottom tracks, with gap not exceeding 1/8 inch between the end of wall-framing member and the web of track.
 - 1. Fasten both flanges of studs to top and bottom tracks.
 - 2. Space studs as follows:
 - a. Stud Spacing: 16 inches.
- C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar configurations.
- D. Align studs vertically where floor framing interrupts wall-framing continuity. Where studs cannot be aligned, continuously reinforce track to transfer loads.
- E. Align floor and roof framing over studs according to AISI S200, Section C1. Where framing cannot be aligned, continuously reinforce track to transfer loads.
- F. Anchor studs abutting structural columns or walls, including masonry walls, to supporting structure.
- G. Install headers over wall openings wider than stud spacing. Locate headers above openings. Fabricate headers of compound shapes indicated or required to transfer load to supporting studs, complete with clip-angle connectors, web stiffeners, or gusset plates.
 - 1. Frame wall openings with not less than a double stud at each jamb of frame. Fasten jamb members together to uniformly distribute loads.
 - 2. Install tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with clip angles or by welding, and space jack studs same as full-height wall studs.

- H. Install supplementary framing, blocking, and bracing in stud framing indicated to support fixtures, equipment, services, casework, heavy trim, furnishings, and similar work requiring attachment to framing.
 - 1. If type of supplementary support is not indicated, comply with stud manufacturer's written recommendations and industry standards in each case, considering weight or load resulting from item supported.
- I. Install horizontal bridging in stud system, spaced vertically 48 inches. Fasten at each stud intersection.
 - 1. Channel Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs with a minimum of two screws into each flange of the clip angle for framing members up to 6 inches deep.
 - 2. Strap Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges, and secure solid blocking to stud webs or flanges.
- J. Install miscellaneous framing and connections, including supplementary framing, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

3.5 INSTALLATION TOLERANCES

- A. Install cold-formed steel framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
 - 1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error are not to exceed minimum fastening requirements of sheathing or other finishing materials.

3.6 REPAIR

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanized repair paint according to ASTM A780/A780M and manufacturer's written instructions.

3.7 FIELD QUALITY CONTROL

- A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Field and shop welds will be subject to testing and inspecting.
- C. Testing agency will report test results promptly and in writing to Contractor and Architect.
- D. Cold-formed steel framing will be considered defective if it does not pass tests and inspections.

- E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.8 PROTECTION

- A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed steel framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION 05 40 00

SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 – GENERAL

1.1 RELATED WORK DESCRIBED ELSEWHERE

- A. Section 05 4000: Cold Formed Metal Framing.
- B. Section 07 5423.01: 80 mil TPO Fully Adhered Roofing System
- C. Division 10: Specialties.
- D. Division 11: Equipment.

1.2 DESCRIPTION OF WORK

- A. Rough carpentry includes carpentry work not specified as part of other sections and which is generally not exposed, except as otherwise indicated. Types of work in this section include rough carpentry for wood grouts, nailers, blocking and sleepers.
- B. Use products that are extracted, processed and manufactured local to the job site (within 500 miles) where economically feasible.
- C. Use composite wood and agrifiber products that contain no added urea-formaldehyde resins.

1.3 SUBMITTALS FOR WOOD TREATMENT DATA

- A. Submit treatment manufacturer's instructions for proper use of each type of treated material.
 - 1. Fire-Retardant Treatment: Include certification by treating plant that treatment materials comply with governing ordinances and that treatment will not bleed through finished surfaces.

1.4 PRODUCT HANDLING

- A. Keep material dry at all times. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber and plywood and provide air circulation within stacks.

1.5 JOB CONDITIONS

- A. Fit carpentry work to other work; scribe and cope as required for accurate fit. Correlate location of furring, nails, blocking, the grounds, and similar supports to allow proper attachment to other work.

1.6 DEFINITIONS

- A. Composite wood and agrifiber products are defined as: particleboard, medium density fiberboard (MDF), plywood, wheatboard, strawboard, panel substrates and door cores.

PART 2 - PRODUCTS

2.1 WOOD PRODUCT QUALITY STANDARDS

- A. Lumber Standards: Comply with PS 20
- B. Plywood Standard: Comply with PS 1
- C. Factory mark each piece of lumber and plywood with type, grade, mill, and grading agency, except omit marking from surfaces to be exposed with transparent finish or without finish.

2.2 MATERIALS

- A. Lumber: Nominal sizes are indicated, except as shown by detail dimension. Provide actual sizes as required by PS-20 for moisture content specified for each use.
 - 1. Provide dressed lumber S4S unless otherwise indicated.
 - 2. Provide seasoned lumber with 19% maximum moisture content at time of dressing.
- B. Boards (less than 2" thick)
 - 1. Exposed Boards: Where boards will be exposed in the finished work, provide the following:
 - a. Moisture Content: 19% maximum, "S-Dry"
 - b. Where transparent or natural finish or no finish is indicated, provide clear fir.
 - c. Where painted finish is indicated, provide Southern Pine No. 2 boards (SPIB) or Douglas Fir construction boards (WCLB or WWPA)
 - 2. Concealed Boards: Where boards will be concealed by other work, provide lumber of 19% maximum moisture content (S-Dry) and of the following species and grade. Redwood construction common (RIS), Southern Pine No. 2 boards (SPIB), or any species graded construction boards (WCLB or WWPA).
 - 3. Board Sizes: Provide the sizes indicated.
- C. Miscellaneous Lumber
 - 1. Provide wood for support or attachment of other work, including cant strips, bucks, nails, blocking, furring, grounds, stripping, and similar members. Provide lumber of sizes shown or specified, worked into shapes shown and as follows. Moisture content shall be 15% maximum for lumber items not specified to receive wood preservative treatment.
 - 2. Grade: Construction grade light framing size lumber of any species or board size lumber as required. Provide construction grade boards (RIS or WCLB) or No. 2 boards (SPIB or WWPA).
- D. Plywood
 - 1. Exposed Plywood: Where plywood will be exposed in the finished work, provide the following:

- a. Where transparent or natural finish or no finish is indicated, provide exterior type plywood for exterior use and interior type with exterior glue for interior use, of species indicated.
 - b. Where painted finish is indicated, provide A-C/EXT-APA plywood Grade A face exposed and Grade C concealed for exterior use, and provide A-D/ INT-APA plywood with Grade A face exposed and Grade D concealed for interior use.
2. Concealed Plywood: Where plywood will be concealed by other work, provide C-D Plugged/INT-APA.
- a. For plywood blocking, nailers, etc. to be concealed within wall or ceiling construction, provide fire-retardant treated plywood with exterior glue.
 - b. For backing panels for electrical or telephone equipment, provide fire-retardant treated plywood with exterior glue.
 - c. For plywood used in the roofing system: all plywood is to be a minimum of ½”, APA Rated Exterior, Structural 1, FRTW. Only waterproof glue is acceptable. Refer to drawings for plywood thickness at each detail.
3. Plywood used in building’s interior must meet requirements of the South Coast Air Quality Management District (SCAQMD) Rule #1168. Unoccupied spaces, such as utility rooms, that open to the exterior and are completely sealed off from regularly occupied spaces are exempt from this requirement.
- E. Miscellaneous Materials - Fasteners and Anchorages: Provide size, type, material and finish as indicated and as recommended by applicable standards, complying with applicable Federal Specifications for nails, staples, screws, bolts, nuts, washers and anchoring devices. Provide metal hangers and framing anchors of size and type recommended by manufacturer for each use including recommended nails. Where rough carpentry work is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners and anchorages with a hot-dip zinc coating (ASTM A 153).
- F. Nailers
1. All nailers shall be #2 or better, construction grade lumber, FRTW.
 2. Size to be indicated on the drawings.
 3. Minimum nailer size shall be 2” x 6” (nominal).
 4. Minimum top nailer thickness shall be 1½ (nominal).
 5. Nailers shall extend ½” beyond metal flanges.
- G. Carbon Steel Fasteners
1. All fasteners must be carbon steel with corrosion-resistant coating. Fasteners shall meet FM 4470.
 2. Masonry/Concrete Fasteners
 - a. Corrosion-Resistant, threaded fastener with low profile head.
 - b. Fasteners shall be a minimum of 3/16” diameter with a 1” minimum embedment.
 - c. Fastener to be GM Global approved.
 - d. Approved Products:
 - i. Tapcon Flat-Head Phillips with Blue Climaseal or White UltraShield by ITW Buildex.
 - ii. Tapper Flat-Head Phillips with Perma-Seal Coating by Powers Fasteners, Inc.
 3. Steel/Wood Fasteners

- a. Corrosion-Resistant, self-tapping, self-drilling screw with low profile head.
 - b. Fastener to be FM Global approved.
 - c. Approved Products
 - i. Roof Grip by OMG with Climaseal Coating.
 - ii. Dekfast by SFS Intec, Inc., with Sentri Coating.
 - iii. Standard roofing fastener by OMG, with CR-10 coating.
 - d. Fasteners to be #12 minimum and of sufficient length to penetrate into steel ¾” and wood 1”.
4. Gypsum/Cementitious Wood Fiber Decking
- a. Corrosion-resistant, ¼” toggle bolt with low profile head. Fastener to be carbon steel with fluorocarbon, corrosion-resistant coating.
 - b. Fastener shall be FM Global approved.
 - c. Approved Products:
 - i. Speed-Lock Toggle by Powers Fasteners, Inc.
 - ii. Iron-Lok Toggle bolt by OMG.
 - d. Fastener shall be of sufficient length to penetrate deck as required for proper application, in accordance with manufacturer’s recommendations.
5. Washers
- a. Round, carbon steel, Federal Specification FF-2-92. Minimum diameter 5/8”.

2.3 WOOD TREATMENT

- A. Fire-Retardant Treatment: Where “FR-S”, or “fire treated” lumber or plywood is specified or otherwise indicated, provide materials which comply with AWWA Standards for pressure impregnation with fire-retardant chemicals and which have a flame spread rating of not more than 25 when tested in accordance with UL Test 723 or ASTM E 84, and show no increase in flame spread and significant progressive combustion upon continuation of test for additional 20 minutes.
- 1. Fire-retardant treat all wood nailers, blocking, stripping, furring, and other wood members installed within or concealed by wall, floor or ceiling systems; fire-retardant treat all plywood telephone and electrical equipment mounting panels.
 - 2. Use fire-retardant treatment which will not bleed through or adversely affect type of finish indicated and which does not require brush treatment of field-made end cuts to maintain fire hazard classification.
 - 3. Kiln-dry treated items to maximum moisture content of 19%.
 - 4. Provide UL label on each piece of fire-retardant lumber or plywood.
- B. Inspect each piece of treated lumber or plywood after drying and discard damaged or defective pieces.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General

- 1. Discard units of material with defects which might impair quality of work and units which are too small to fabricate work with minimum joints or optimum joint arrangement.
- 2. Set carpentry work accurately to required levels, lines with members plumb and true and accurately cut and fitted. All cuts on members exposed to water to receive one coat clear sealer and allowed to dry prior to incorporation into the job.

3. Securely attach carpentry work to substrate by anchoring and fastening as shown and as required by recognized standards. Countersink nail heads on exposed carpentry work and fill holes.
4. Use common wire nails, except as otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; pre-drill as required.

B. Wood Grounds, Nailers (see paragraph 3.1.C for Nailers For Roofing), Blocking and Sleepers

1. Provide wherever shown and where required for screeding or attachment of other work. Form to shapes as shown and cut as required for true line and level of work to be attached. Coordinate location with other work involved.
2. Attach substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise shown. Where possible, anchor to the formwork before concrete placement.
3. Provide permanent grounds of dressed, key-beveled lumber not less than 1-1/2" wide and of thickness required to bring face of ground to exact thickness of finish material involved. Remove temporary grounds when no longer required.

C. Plywood For Roofing

1. Plywood is to be installed as per detail drawings.
2. Plywood joints must be true and well fitting, allowing for expansion and contraction. Allow 1/8" at end and edge joints.
3. Plywood fasteners shall be installed in a uniform grid pattern, with a maximum spacing of 18" o.c. between adjacent fasteners.

END OF SECTION 06 10 00

SECTION 06 16 00 - SHEATHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wall sheathing.
2. Parapet sheathing.

1.2 ACTION SUBMITTALS

A. Product Data:

1. Wall sheathing.
2. Parapet sheathing.

B. Product Data Submittals: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Indicate type of preservative used and net amount of preservative retained.
2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Include physical properties of treated materials.
3. For fire-retardant treatments, include physical properties of treated plywood both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency in accordance with ASTM D5516.
4. For products receiving waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
5. For air-barrier and water-resistant glass-mat gypsum sheathing, include manufacturer's technical data and tested physical and performance properties of products.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer, including list of ABAA-certified installers and supervisors employed by Installer, who work on Project.

B. Product Certificates: From air-barrier and water-resistant glass-mat gypsum sheathing manufacturer, certifying compatibility of sheathing accessory materials with Project materials that connect to or that come in contact with the sheathing.

C. Product Test Reports: For each air-barrier and water-resistant glass-mat gypsum sheathing assembly, indicating compliance with specified requirements, for tests performed by a qualified testing agency.

D. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preserved-treated plywood.

E. Field quality-control reports.

1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications:

1. For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance Ratings: As tested in accordance with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.2 WOOD PANEL PRODUCTS

A. Emissions: Products are to meet the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

B. Thickness: As needed to comply with requirements specified, but not less than thickness indicated.

C. Factory mark panels to indicate compliance with applicable standard.

2.3 PRESERVATIVE-TREATED PLYWOOD

A. Preservative Treatment by Pressure Process: AWP A U1; Use Category UC2.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
- B. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.
- C. Application: Treat all plywood unless otherwise indicated.

2.4 FIRE-RETARDANT-TREATED PLYWOOD

- A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
- B. Fire-Retardant-Treated Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested in accordance with ASTM E84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
 1. Use treatment that does not promote corrosion of metal fasteners.
 2. Exterior Type: Treated materials are to comply with requirements specified above for fire-retardant-treated plywood by pressure process after being subjected to accelerated weathering in accordance with ASTM D2898. Use for exterior locations and where indicated.
 3. Interior Type A: Treated materials are to have a moisture content of 28 percent or less when tested in accordance with ASTM D3201/D3201M at 92 percent relative humidity. Use where exterior type is not indicated.
 4. Design Value Adjustment Factors: Treated lumber plywood is to be tested in accordance with ASTM D5516 and design value adjustment factors are to be calculated in accordance with ASTM D6305. Span ratings after treatment are to be not less than span ratings specified.
- C. Kiln-dry material after treatment to a maximum moisture content of 15 percent. Do not use material that is warped or does not comply with requirements for untreated material.
- D. Identify fire-retardant-treated plywood with appropriate classification marking of qualified testing agency.
- E. Application: Treat all plywood unless otherwise indicated.

2.5 WALL SHEATHING

- A. Plywood Sheathing, Walls: , Exterior, Structural I sheathing.
 1. Span Rating: Not less than 32/16.
 2. Nominal Thickness: Not less than 1/2 inch.

- B. Oriented-Strand-Board Sheathing, Walls: DOC PS 2, Exposure 1, Structural I sheathing.
 - 1. Span Rating: Not less than 24/16.
 - 2. Nominal Thickness: Not less than 1/2 inch.

2.6 PARAPET SHEATHING

- A. Plywood Sheathing, Parapets: , Exterior, Structural I sheathing.
 - 1. Span Rating: Not less than 32/16.
 - 2. Nominal Thickness: Not less than 1/2 inch.
- B. Oriented-Strand-Board Sheathing, Parapets: DOC PS 2, Exposure 1, Structural I sheathing.
 - 1. Span Rating: Not less than 24/16.
 - 2. Nominal Thickness: Not less than 7/16 inch.

2.7 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
 - 1. For parapet and wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M.
 - 2. For parapet and wall sheathing, provide fasteners with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours in accordance with ASTM B117.
- B. Nails, Brads, and Staples: ASTM F1667.
- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- D. Screws for Fastening Sheathing to Wood Framing: ASTM C1002.
- E. Screws for Fastening Wood Structural Panels to Cold-Formed Metal Framing: ASTM C954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.
- F. Screws for Fastening Gypsum Sheathing to Cold-Formed Metal Framing: Steel drill screws, in length recommended by sheathing manufacturer for thickness of sheathing to be attached.
 - 1. For steel framing less than 0.0329 inch thick, use screws that comply with ASTM C1002.
 - 2. For steel framing from 0.033 to 0.112 inch thick, use screws that comply with ASTM C954.
- G. Screws for Fastening Composite Nail Base Insulated Roof Sheathing to Metal Roof Deck: Steel drill screws, in type and length recommended by sheathing manufacturer for thickness of sheathing to be attached, with organic-polymer or other corrosion-protective coating having a

salt-spray resistance of more than 800 hours in accordance with ASTM B117. Provide washers or plates if recommended by sheathing manufacturer.

2.8 MISCELLANEOUS MATERIALS

- A. Adhesives for Field Gluing Panels to Wood Framing: Formulation complying with APA AFG-01 that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.
- B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.
- C. Securely attach to substrate by fastening as indicated, complying with the following:
 - 1. Table 2304.10.1, "Fastening Schedule," in the ICC's International Building Code.
 - 2. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in the ICC's International Residential Code for One- and Two-Family Dwellings.
 - 3. ICC-ES evaluation report for fastener.
- D. Use common wire nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections. Install fasteners without splitting wood.
- E. Coordinate wall and parapet sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.
- F. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.
- G. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

3.2 INSTALLATION OF WOOD STRUCTURAL PANEL

- A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

- B. Fastening Methods: Fasten panels as indicated below:
 - 1. Wall and Roof Sheathing:
 - a. Screw to cold-formed metal framing.
 - b. Space panels 1/8 inch apart at edges and ends.

3.3 INSTALLATION OF CEMENTITIOUS BACKER UNITS

- A. Install panels and treat joints in accordance with ANSI A108.11 and manufacturer's written instructions for type of application indicated.

3.4 FIELD QUALITY CONTROL

- A. ABAA Quality Assurance Program: Perform examinations, preparation, installation, testing, and inspections under ABAA's Quality Assurance Program.
- B. Testing and Inspecting Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- C. Inspections: Air-barrier and water-resistant glass-mat gypsum sheathing, accessories, and installation are subject to inspection for compliance with requirements. Inspections may include the following:
 - 1. Continuity of air-barrier system has been achieved throughout the building envelope with no gaps or holes.
 - 2. Laps in strips and transition strips have complied with minimum requirements and have been shingled in the correct direction (or mastic has been applied on exposed edges), with no fishmouths.
 - 3. Termination mastic has been applied on cut edges.
 - 4. Strips and transition strips have been firmly adhered to substrate.
 - 5. Compatible materials have been used.
 - 6. Transitions at changes in direction and structural support at gaps have been provided.
 - 7. Connections between assemblies (sheathing and sealants) have complied with requirements for cleanliness, surface preparation and priming, structural support, integrity, and continuity of seal.
 - 8. All penetrations have been sealed.
- D. Tests: As determined by testing agency from among the following tests:
 - 1. Air-Leakage-Location Testing: Air-barrier sheathing assemblies will be tested for evidence of air leakage in accordance with ASTM E1186, chamber pressurization or depressurization with smoke tracers.
- E. Air barriers will be considered defective if they do not pass tests and inspections.
- F. Repair damage to air barriers caused by testing; follow manufacturer's written instructions.
- G. Prepare test and inspection reports.

END OF SECTION 06 16 00

SECTION 06 4500 CUSTOM PLASTIC LAMINATE CASEWORK

PART 1 -GENERAL

1.1 SUMMARY OF THE WORK:

- A. Furnish delivered to jobsite, unloaded, set in place, leveled and scribed, the work of this Section as indicated on the drawings and as specified and required for a complete installation.

1.2 SECTION INCLUDES:

- A. Custom casework: high-pressure decorative laminate finish
- B. Countertops: high-pressure decorative laminate finish
- C. Hardware customarily furnished by the casework manufacturer
- D. Installation

1.3 RELATED SECTIONS

- A. Rough carpentry, Section 06 1000, wood blocking, and grounds within finished walls and above finished ceiling
- B. Division 5, Metal Fabrications
- C. Division 7, Joint Sealants
- D. Division 10, Specialties
- E. Division 11, Equipment

1.4 REFERENCES

- A. Architectural Woodwork Institute, AWI Quality Standards, current edition
- B. ANSI/BHMA A156.9 - Cabinet hardware
- C. NEMA LD3 - High-pressure decorative laminate
- D. Particleboard – ANSI 208.1 (American National Standards Institute)
- E. Softwood plywood – US Products Standards PS1
- F. Hardboard – ANSI AHA 135.484 (American Hardboard Association)
- G. PVA adhesive (polyvinyl acetate) white glue, Type II ASTM-D3110
- H. Aliphatic adhesive (carpenter’s glue) Type II
- I. Solvent-based contact cement MMM-A-J1308

1.5 SUBMITTALS

- A. Submit as required in Section 01 3300 “Submittal Procedures”.

B. SHOP DRAWINGS:

1. Prior to commencement of work under this section, submit copies as required in Section 01 3300 "Submittal Procedures".
2. Submit plans and elevations indicating materials, profiles, assembly methods, joint details, fastening methods, and schedule of finishes. Include hardware cut sheets and lock schedules.
3. Submit drawings with dimensions in units of feet and inches.

C. SAMPLES:

1. If required by the Architect, submit a selected manufacturer's current full range of colors and patterns identifying those colors and patterns with premium costs.
2. Submit one sample of each type of required hardware in specified finish.

1.6 QUALITY ASSURANCE

- A. Perform work in accordance with AWI Quality Standards, current addition.
- B. Work in this Section shall comply with the specified Grade(s) or Work and Section(s) of the current edition of the Architectural Woodwork Institute Quality Standards.
- C. Woodwork manufacturers shall be certified by the AWI Quality Certification Program as competent to perform the work specified.
- D. Certification shall be evidenced through the application of AWI Quality Certification labels and/or the issuance of an AWI letter of certification for the project. QCP Registration # 12.1096.
- E. Contractors and their personnel engaged in the work of this section shall be able to demonstrate successful experience with work of comparable extent, complexity and quality to that shown and specified.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to job site in a timely manner to ensure uninterrupted progress. Deliver all products with protective covering to prevent damage. Promptly remove damaged materials from job site and make timely replacements.
- B. Protect units from moisture damage according to AWI Quality Standards, Section 1700, Installation.
- C. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC is operating and maintaining designed temperature and relative humidity levels for the remainder of the construction period.

1.8 COORDINATION

- A. Coordinate work of this Section with other applicable trades.
- B. Pre-cut rough-ins for plumbing, electrical and data wherever possible.

1.9 FIELD MEASUREMENTS

- A. Where casework is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before fabrication, and show recorded measurements on final shop drawings.

1.10 WARRANTY.

- A. Provide a written warranty that all casework materials and workmanship will be free from defects for a period of one year from the date of Substantial Completion of the project. Any defective work is to be repaired or replaced at no cost to the Owner.

PART 2 -PRODUCTS:

2.1 APPROVED MANUFACTURERS:

- A. The following manufacturers are approved for use based upon their being current participants in the Quality Certification Program (QCP) of the Architectural Woodwork Institute (AWI). If other manufacturers are current participants in the QCP, they may submit for Prior Approval as approved manufacturers:
 1. Albuquerque Cabinet Brokers: 4800 Hawkins NE, Albuquerque, NM 87109.
 2. Antix Inc.: 717 West Organ, Las Cruces, NM 88005.
 3. Enterprise Builders Corporation, Inc.: P.O. Box 3987, Albuquerque, NM 87190.
 4. Jaynes Structures, Inc.: 2906 Broadway NE, Albuquerque, New Mexico 87107.
 5. Fame Mfg. NM School Products: 3020 Princeton NE, Albuquerque, NM 87107.
 6. Institutional Products, LLC: 230 Cynthia Loop NW, Suite C, Albuquerque, NM 87114.
 7. Jaynes Structures, Inc.: 2906 Broadway Ne, Albuquerque, NM 87125.
 8. O.G.B. Architectural Millwork: 3711 Paseo Del Norte, Suite B, Albuquerque, NM 87113.
 9. P & M Caseworks, LLC: P.O. Box 90817, Albuquerque, NM 87199.

2.2 SHEET MATERIALS

- A. **SOFTWOOD PLYWOOD:** Graded in accordance with AWI Grade Custom.
- B. **WOOD PARTICLEBOARD AND/OR FIBERBOARD:** Shall be Industrial Grade Medium Density, complying with current ANSI A208.1 9 (particleboard) or ANSI A208.2 (fiberboard), and shall be a “45 lb” board.
- C. **THERMOSET DECORATIVE OVERLAY:** Particleboard or medium density fiberboard with surface of thermally fused, melamine–impregnated decorative paper complying with LMA SAT-1. Color: White.

2.3 HIGH PRESSURE DECORATIVE LAMINATE

- A. **AVAILABLE MANUFACTURERS:** Subject to compliance with requirements, manufacturers offering high-pressure decorative laminate that may be incorporated into the work include:
 1. Formica Corporation www.formica.com
 2. Wilsonart International www.wilsonart.com
 3. Nevamar Company www.nevamar.com

2.4 LAMINATE COLORS AND PATTERNS

- A. In the absence of a specified laminate pattern and/or color, furnish non-premium-priced decorative laminates from manufacturer's standard selections, maximum of four different colors and/or patterns per project, limited to one color/pattern for cabinet and one color/pattern for countertop per elevation. When specified, furnish multiple patterns, colors and/or specialty materials.

2.5 HARDWARE

A. CLASSROOM CABINETS

- 1. Hinges: Provide hinges from one of the following listed Brands:
 - a. MEPLA – SSP 73 Hinge System.
 - b. GRASS - Series 9000 Institutional Hinge System
- 2. Quantity of hinges per door as required by the manufacturer's specifications.

B. OFFICE CABINETS

- 1. Hinges: Provide hinges from one of the following listed Brands:
 - a. MEPLA – Model SSP 29, 125 deg. Slide on Hinge.
 - b. GRASS – Series 3803 series, 120 deg. snap on hinge.
 - c. BLUM – 120 deg. Clip on hinge.

C. PULLS

- 1. Door and drawer pulls shall E.B. Bradley Co. Model No. 188, Dull Chrome.
- 2. Substitutions for the above products shall be submitted for approval prior to bidding in accordance with the requirements of Section 00101, Instruction to Bidders.

D. LOCKS: Provide on all wardrobe doors. Brand: TIMBERLINE Cam Lock, Model CB-080 through 199 series. Locks to have a Bezel. Strike plates used where appropriate.

- 1. Keying Requirements: All locks in a single room shall be keyed alike. Locks shall be keyed differently from room to room. Provide 2 master keys.

E. LATCHES: EPCO Model number 1018-N. Use on inactive door opposite locks.

F. DRAWER SLIDES: Drawer slides for all standard drawers shall be regular extension epoxy coated steel modular system by one of the following:

- 1. BLUM METABOX; Drawer System 320 & 330 Series. Color, white.
- 2. GRASS ZARGON; Drawer System 6000 Series. Color, white.
- 3. MEPLA INTEGRA; Drawer System "Integra Top" Clip on.

Where file drawers are shown in drawings, they shall have full extension slides and standard file hangers with option for letter or legal size files.

G. CABINET SHELF STANDARDS/SUPPORTS: Bainbridge Mfg. 5mm dual pin part #3220 or equal.

- H. HORIZONTAL DIVIDER SUPPORTS: Hafele 5mm steel wire (“magic wire”). Furnish size appropriate to shelf size.
- I. WARDROBE CABINET HARDWARE:
 - 1. CLOSET ROD: Knape & Vogt #750 I Regular. Chrome-look finish.
 - a. ROD FLANGES: Knape & Vogt #734 & #735 per rod. Chrome-look finish.
 - b. ROD CENTER SUPPORTS: Knape & Vogt #1195. White.
 - c. HOOKS: IVES #582 dual hook on inside of door. Chrome-look finish.
- J. COUNTERTOP WIRING GROMMETS: 2 1/2” diameter with covers. Color to be selected by the architect from manufacturer’s standard line.
- K. DOOR RESTRAINT: All cabinet doors to receive 1/8” diameter x 6-7/8” long braided steel rope with plastic (PVC) coating door restraint with screws and washers for a complete installation. Basis of Design: Hafele Door Restraint item # 366.74.900, or equal.

PART 3 -EXECUTION

3.1 FABRICATION - CABINET COMPONENTS

A. GENERAL:

- 1. Comply with the AWI Quality Standards (latest edition) Custom Grade.
- 2. Reference Section 400-G-3, Identification of Parts, for the criteria of exposed and semi-exposed surfaces.
- 3. Cabinet width dimensions are not to exceed 32” for both wall cabinets and base cabinets. Sink base cabinets and Map drawer cabinets will be the only exceptions.
- 4. Office Cabinetry style shall be constructed per Section 400-G-7, A; Flush Overlay.
- 5. Classroom cabinetry style shall be constructed per Section 400-G-7, B; Reveal Overlay.

B. DRAWERS:

- 1. Drawer fronts shall be 3/4” thick particleboard overlaid with high-pressure plastic laminate on both faces. Edges shall be laminate cladding to match the face color.
- 2. Steel Drawer Systems: Drawer bottoms and backs shall be 3/4” thick thermofused melamine. Color to match cabinet interior. Edges shall be same color thermofused melamine to match cabinet interior.
- 3. Built Drawer Boxes:
 - a. Drawer sides, sub front and backs shall be 1/2” thick minimum thermofused melamine. Color to match cabinet interior. Edges shall be same color thermofused melamine to match cabinet interior.
 - b. Drawer bottoms shall be 1/2” thick minimum thermofused melamine. Color to match cabinet interior. Sides are rabbeted to accept bottom and bottom is to be glued and screwed as well as supported by screws from the bottom mount slides.

- C. DOORS: Doors shall be 3/4” thick particleboard overlaid with a high-pressure plastic laminate on both faces. Edges shall be laminate cladding to match face color.

D. CABINET ENDS, TOPS & BOTTOMS:

1. All panels shall be constructed with 3/4" particleboard as the core material.
2. At Semi-exposed (see AWI standards for definition and locations) ends, tops or bottoms the particleboard shall be overlaid with thermofused melamine on the exterior face.
3. At Exposed (see AWI standards for definition and locations) ends, tops or bottoms, the particleboard shall be overlaid with a high-pressure decorative laminate on exposed faces. The inside color shall match the cabinet interior with the face color to match exterior color. Edges shall be laminate cladding to match the face color.
4. In cabinets with doors, the interior surfaces of the particleboard shall be overlaid with either high-pressure laminate cabinet liner or thermos fused melamine. The color shall match the melamine surfaced back color. The front edges shall be laminate cladding to match the face color.
5. In open cabinets (without doors), the interior surfaces of the particleboard shall be overlaid with high pressure decorative to match exposed exterior color. Edges shall be laminate cladding to match the face color.
6. All end panels shall be drilled for adjustable shelf supports with .5mm diameter holes on 32mm (1 1/4") centers. For shelves up to and including 30" depth, two vertical sets of holes shall be provided at each end panel. For shelves over 30" deep, three vertical sets of holes shall be provided at each end panel.

E. FIXED AND ADJUSTABLE SHELVES:

1. Semi-exposed Shelves: Regardless of cabinet width, all shelves shall be 1" thick particleboard overlaid with thermofused melamine on top and bottom faces. Color to match cabinet interior.
2. Exposed Shelves: Regardless of cabinet width, all shelves shall be 1" particleboard overlaid with high-pressure decorative laminate. Color to match exterior unless otherwise noted on the drawings.
3. All four edges of adjustable shelves and front edge of fixed shelves shall be banded with thermofused melamine in color to match shelf color.

F. CABINET BACKS:

1. All semi-exposed cabinet backs shall be 3/4" thick minimum thermofused melamine. Color to match cabinet interior.
2. All exposed backs shall be 3/4" thick minimum particleboard overlaid with a high-pressure plastic laminate. Color to match exterior for exposed backs.
3. Provide removable backs for service access where shown on the project drawings.
4. All backs shall be full bound by all sides, tops and bottoms of the cabinet.

G. G. DIVIDERS AND PARTITIONS:

1. Vertical dividers and partitions shall be 3/4" particleboard overlaid with thermofused melamine on both faces when semi-exposed and high-pressure decorative laminate for exposed surfaces. The exposed edges shall laminate cladding to match face color.
2. Fixed Horizontal Dividers: Where indicated on the drawings, dividers less than 6" apart and less than 12" wide shall be 1/4" tempered hardboard grooved into adjacent cabinet members. The edges shall be sanded and entire shelf clear sealed.

3. Adjustable Horizontal Dividers: Where indicated on the drawings, dividers shall be 3/4" particleboard overlaid with thermofused melamine on both faces when semi-exposed and high-pressure decorative laminate for exposed surfaces. Dividers shall be grooved to accept steel "magic wire" supports. The exposed edges shall be banded with .5mm PVC to match the other case edges

H. CABINET TOE BASES:

1. Cabinet bases shall be 4" standard height made in continuous lengths to ensure straight, level and true line of casework. The standard core materials shall be 3/4" particleboard. In rooms with floor drains, the core material shall be "Medex" MDF board or equal.
2. Bases shall be unfinished and ready for scheduled base finish to be applied.

I. MAP (FLAT FILE) CABINETS:

1. Drawer slides shall be as required in hardware section 2.6.G.
2. Drawer sides, sub front and backs shall be 1/2" thick minimum thermofused melamine. Color shall match cabinet interior. Edges shall be laminate cladding to match face color.
3. Drawer bottoms shall be 1/2" thick minimum thermofused melamine. Color shall match cabinet interior. Sides shall be rabbeted to accept bottom and bottom is to be glued and screwed as well as supported by screws from the bottom mount slides.
4. Map cabinets over 24" wide shall have 2 pulls per drawer face.
5. Provide a paper curl stop on each drawer box located at the top back of the drawer box. Stop shall be 4" wide by 1/4" thick melamine panel and shall be screw attached.

J. NOT USED

3.2 FABRICATION - COUNTER TOPS

A. GENERAL:

1. Comply with the AWI Quality Standards (latest edition) Custom Grade. Reference Section 400C
2. Decorative laminate counter tops shall be PF42 NEMA grade laminate with .020" backing sheet bonded to 3/4" particleboard substrate. Adhesives shall be either Type II PVA or contact cement depending on the size of the materials and job conditions.
3. Decorative laminate color selections shall be as selected from manufacturer's non-premium-priced patterns and colors. Reference Part 2, Section 2.2 and 2.3 for manufacturer brands and color quantity requirements.
4. Counter top thickness shall be as noted in Section B. below.
5. Where tops and back splashes in which sinks occur, utilize an industrial grade particleboard or fiberboard with a 24-hour thickness swell factor of 5% or less and a 24-hour water absorption factor of 10% or less.
6. Counter tops shall be furnished in the longest lengths possible. When joints are required, they shall be factory prepared with a minimum of three 1/4" joint bolts each. Joints shall be field assembled with waterproof sealant to ensure stable and rigid construction. Avoid joints within 24" of sinks or knee spaces.

B. COUNTERTOP OPTIONS:

1. Decorative Laminate Counter Tops.

- a. Where called for on the drawings, overall counter top thickness shall be 1 1/4" with buildup added to the substrate. Standard overhang from cabinet body along front shall be 1 1/2". Exposed end overhang shall be 1/2".
- b. Front edge of counter tops shall have same laminate cladding on horizontal surfaces.
- c. Back splashes shall be 3/4" thick and 4" high edged with laminate cladding as on horizontal surfaces.

3.3 EXAMINATION

- A. Verify adequacy of in wall backing and support framing.
- B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work
- C. Before installing architectural woodwork, examine shop fabricated work for completion and complete work as required, including back priming and removal of packing.
- D. Condition building and woodwork to average prevailing humidity conditions in installation areas before installing.

3.4 INSTALLATION

- A. Install work in accordance with AWI Quality Standards (latest edition) Section 1700. Grade Custom.
- B. Set and secure materials and components in place, plumb and level. Shim as required with concealed shims.
- C. Scribe work abutting other components or work. Refinish cut surfaces or repair damaged finish at cuts.
- D. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure to grounds, strapping and blocking with countersunk, concealed fasteners with blind nailing where possible for a complete installation.
- E. Cabinets: Install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated.
- F. Tops: Anchor securely to base units and other support systems as indicated. Caulk space between backsplash and wall with specified sealant.

3.5 ADJUSTING AND CLEANING

- A. Repair damaged and defective woodwork where possible to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.
- C. Clean woodwork on exposed and semi-exposed surfaces. Touch up shop applied finishes to restore damaged or soiled areas.

3.6 PROTECTION

- A. Provide final protection and maintain conditions in a manner acceptable to fabricator and installer that ensures that woodwork is without damage or deterioration at the time of Substantial Completion.

END OF SECTION 06 4500

SECTION 06 6116 - SOLID SURFACING

PART 1 -GENERAL

1.1 SUMMARY

- A. Section Includes: Fabrication and installation of solid surfacing components including solid surface material shaped goods and accessories indicated, specified, and required for installation.
- B. Related Sections:
 - 1. Rough Carpentry: Section 06 1000.
 - 2. Custom Plastic Laminate Casework: Section 06 4500.
 - 3. Sealants: Section 07 9200.
 - 4. Aluminum-Framed Entrances and Storefronts: Section 08 4100.
 - 5. Plumbing: Division 22.

1.2 SYSTEM DESCRIPTION

- A. Solid Surface Sheet: Homogenous sheet material composed of acrylic resins, fire retardant filler materials, and coloring agents.

1.3 SUBMITTALS

- A. Comply with Section 01 3300, unless otherwise indicated.
- B. Product Data:
 - 1. Detailed specification of construction and fabrication.
 - 2. Manufacturer's installation instructions.
 - 3. Manufacturer's detailed recommendations for handling, storage, installation, protection, and maintenance.
- C. Shop Drawings: Installation details including location and layout of each type of fabrication and accessory.
- D. Samples: Full range of colors and patterns.
- E. Contract Closeout Submittals: Comply with Section 01 7800.

1.4 QUALITY ASSURANCE

- A. Fabricator Qualifications: Manufacturer's certified solid surface fabricator/installer.
- B. Installer Qualifications: Firm experienced in installation or application of systems similar in complexity to those required for this Project, including specific requirements indicated.
 - 1. Acceptable to or licensed by manufacturer.
- C. Source Limitations: Obtain materials and products from single source.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver fabrications appropriately wrapped in protective materials.
- B. Protect fabrications from damage.

1.6 PROJECT CONDITIONS

- A. Maintain relative humidity planned for building occupants and an ambient temperature between 65 and 75_F for 48 hours prior to and during installation. After installation, maintain relative humidity and ambient temperature planned for building occupants.

1.7 1.7 WARRANTY

- A. Furnish manufacturer's limited 10-year warranty.

PART 2 -PRODUCTS

2.1 MANUFACTURER

- A. Basis of Design: Wilsonart International, (800) 433-3222, www.wilsonart.com.
 - 1. Gibraltar® Solid Surface, Type 051.
 - 2. Available Manufacturers: Subject to compliance with requirements of Contract Documents, manufacturers offering products that may be incorporated into work include, but are not limited to, those named alphabetically below.
 - a. Avonite, Inc.; Avonite Surfaces.
 - b. Formica Corp.; Formica Solid Surfacing.
 - c. LG Chemical, Ltd.; Hi-Macs.
 - d. Samsung; Staron.
 - e. US Surface Warehouse; Livingstone.

2.2 GIBRALTAR® SOLID SURFACE SHEET

- A. Nominal sheet thickness: 0.50 inch (13 mm)
- B. Surface burning characteristics in accordance with ASTM E 84: Class I or A, and as follows:
 - 1. Flame spread: < 25.
 - 2. Smoke developed: <25.
- C. Liquid Absorption, ISO 4586-2, for 1/2-inch material thickness: 0.4 percent after 2-hour period.
- D. Izod Impact, ASTM D 256, Method A: 0.3-foot pounds per inch.
- E. Tensile Modulus, ASTM D 638 Nominal: 1.2 million pounds per square inch.
- F. Thermal Expansion, ASTM D 696: 0.000018 inch per inch per degree F, maximum.
- G. Hardness, ASTM D 2583, Barcol Impressor: 57.
- H. Flexural Toughness, ASTM D 790: 3 (in.-lb./in³).
- I. Deflection Temperature under load, ASTM D 648: 90 degrees C.
- J. Stain Resistance, ANSI Z-124.3 Modified; 3.4: No effect.
- K. Boiling Water Resistance, NEMA LD 3-3.05: No effect.
- L. High Temperature Resistance, NEMA LD 3-3.06: No effect.
- M. Radiant Heat Resistance, NEMA LD 3-3.10: No effect.
- N. Light Resistance, NEMA LD 3-3.03: No effect.
- O. Ball Impact Resistance, NEMA LD 3-3.08, one half pound ball, unsupported: 125 inches.
- P. Specific Gravity (Density ASTM D792): 1.60 grams per cubic centimeter.

- Q. Approximate weight: 4.20 pounds per square foot.
- R. Weatherability, ASTM D 2565: Pass.
- S. Fungus Resistance, ASTM G 21: Pass.
- T. Bacterial Resistance, ASTM G 22: Pass.
- U. Pittsburgh Protocol Toxicity: 66.9 grams.
- V. Pattern and Finishes:
 1. Window stools: Frosty White Mirage #1573MG(2)
 2. Countertops in Reception 105, Staff Lounge 117, and Nurse 123: Khaki Brown Tempest #D50TM(2)
 3. Kindergarten classrooms 201, 202, 203, 204: Light Beige Mirage #1531(2)
 4. Art/Music room 402: Raven Mirage #D426MG(2)
 5. Classrooms 307, 309, 511, 512, 514, 515, and 517: Steel Grey Tempest #9194TM(2)

2.3 ACCESSORY MATERIALS

- A. Joint adhesive: Manufacturer's standard adhesive to create inconspicuous, nonporous joints, with a chemical bond (WA8215).
- B. Not used.
- C. Not used.

2.4 FABRICATION

- A. Fabrication to be performed by the manufacturer's certified solid surface fabricator/installer per the manufacturer's written instructions.
- B. Fabricate components in shop to greatest extent practical to size and shape indicated, in accordance with approved shop drawing and manufacturer's published requirements.
- C. Seams:
 1. Form inconspicuous joints between components.
 2. Reinforce on concealed side with strip of solid surfacing material not less than 1 inch on either side of joint by same thickness as components being joined.
 3. Locate more than 3 inches from cutouts.
- D. Not used.
- E. Not used.
- F. Rout and finish component edges to a smooth, uniform finish. Rout all cutouts then sand all edges smooth. Repair or reject defective or inaccurate work.
- G. Finish: Surfaces shall have a uniform finish.
- H. Thermoforming (optional): Comply with forming data from manufacturer.
 1. Construct matching molds to form components shape.
 2. Form pieces to shape prior to seaming and joining.
 3. Cut pieces larger than finished dimensions, sand edges, remove all nicks and scratches.
 4. Heat entire component uniformly between 280°–325°F during forming.
 5. Prevent blistering, whitening or cracking of solid surfacing during forming.

PART 3 -EXECUTION

3.1 EXAMINATION

- A. Examine substrates to receive solid surfacing. Identify conditions detrimental to proper or timely installation. Do not commence installation until conditions have been corrected.

3.2 PREPARATION

- A. Precondition solid Surfacing in accordance with manufacturer's printed installation instructions.

3.3 INSTALLATION

- A. Install components plumb and level, in accordance with approved shop drawings, project installation details and manufacturer's printed instructions.
- B. Form joints using manufacturer's approved adhesive, with joints inconspicuous in finished work.
- C. Provide backsplashes and endsplashes as indicated on the drawings. Adhere to countertops using manufacturer's recommended silicone sealant.
- D. Remove excessive adhesive and sealants. Components shall be clean on Date of Substantial Completion.
- E. Coordinate plumbing installation with Division 22.

3.4 INSTALLATION OF WINDOW STOOLS

- A. Install window stools full length of window, set securely into place using only concealed fasteners and manufacturer's approved adhesive.
- B. Window stools shall be plumb, true and level.
- C. Provide minimum 1/8" expansion gaps on both sides of window stools, sealed with Manufacturer's approved sealant.
- D. Ease edges and sand smooth.

3.5 INSTALLATION OF COUNTERTOPS

- A. Install plumb, level, true and straight. Shim as necessary using concealed shims.
- B. Attach top securely to base unit or support brackets in accordance with manufacturer's printed instructions.
- C. Seal between wall and component with manufacturer's recommended silicone sealant.
- D. Attach backsplashes and end-splashes to countertops using manufacturer's recommended silicone sealant.

3.6 PROTECTION

- A. Protect surfaces from damage until Date of Substantial Completion. Repair or replace damaged components that cannot be repaired to architect's satisfaction.
- B. Fabricator/Installer to provide the manufacturer's maintenance kit, review maintenance procedures and the manufacturer's warranty with the head of maintenance upon completion of project.

END OF SECTION 06 6116

SECTION 07 24 19

Water-Drainage Exterior Insulation & Finish System (EIFS)

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Installation of exterior insulation & finish system, Class PB, with water-drainage and high impact mesh assembly.

1.2 RELATED SECTIONS

- A. Section 03 30 00 - Cast-in-Place Concrete
- B. Section 04 20 00 - Unit Masonry
- C. Section 06 16 00 - Sheathing
- D. Section 07 62 00 - Sheet Metal Flashing and Trim
- E. Section 07 90 00 - Joint Protection
- F. Section 08 50 00 - Window
- G. Section 09 21 16 - Gypsum Board Assemblies

1.3 REFERENCES

- A. ASTM B117 - Test Method for Salt Spray (Fog) Testing
- B. ASTM C203 - Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation
- C. ASTM C1135 - Test Method for Determining Tensile Adhesion Properties of Structural Sealants
- D. ASTM D968 - Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive
- E. ASTM D1037 - Standard Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials
- F. ASTM D2247 - Practice for Testing Water Resistance of Coatings in 100 Percent Relative Humidity.
- G. ASTM D2294 - Standard Test Method for Creep Properties of Adhesives in Shear by Tension Loading (Metal-to-Metal).
- H. ASTM D2794 - Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
- I. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
- J. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
- K. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings
- L. ASTM E119 - Standard Test Method for Fire Tests of Building Construction and Materials.
- M. ASTM E330 - Test Method for Structural Performance by Uniform Static Air Pressure Difference.
- N. ASTM E331 - Test Method for Water Penetration by Uniform Static Air Pressure Difference.
- O. ASTM E695 - Method for Measuring Relative Resistance to Impact Loading.
- P. ASTM E2134 - Standard Test Method for Evaluating the Tensile-Adhesion Performance of an Exterior Insulation and Finish System (EIFS)
- Q. ASTM E2273 - Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies
- R. ASTM E2430 - Standard Specification For Expanded Polystyrene ("EPS") Thermal Insulation Boards For Use In Exterior Insulation and Finish Systems ("EIFS")
- S. ASTM E2485 - Standard Test Method for Freeze/Thaw Resistance of Exterior Insulation and Finish Systems (EIFS) and Water Resistive Barrier Coatings
- T. ASTM E2486 - Standard Test Method for Impact Resistance of Class PB and PI Exterior Insulation

and Finish Systems (EIFS)

- U. ASTM G155 and G153 - Accelerated Weathering for Exposure of Nonmetallic Materials.
- V. Federal Specification TT-C-555B – Coating, Textured (For Interior and Exterior Masonry Surfaces)
- W. MIL STD 810B - Military Standard, Environmental Test Methods
- X. NFPA 259 - Test Method for Potential Heat of Building Materials.
- Y. NFPA 268 - Standard Test Method for Determining Ignitability of Exterior Wall Assemblies Using a Radiant Heat Energy Source.
- Z. NFPA 285 - Standard Method of Test for the Evaluation of Flammability characteristics of Exterior Nonload-bearing Wall Assemblies Containing Combustible Components Using the Intermediate-scale, Multistory Test Apparatus.

1.4 SYSTEM DESCRIPTION

- A. Description of Water-Drainage Exterior Insulation & Finish System (EIFS) - Class PB
 - 1. An Exterior Insulation and Finish System (EIFS) consisting of Adhesive, Expanded Polystyrene Insulation (EPS) Board, Base Coat with both High Impact and Standard embedded Reinforcing Fabric Mesh, A Waterproof basecoat on horizontal surfaces, a Primer, and Finish Coat(s).
 - 2. This system is installed over fluid applied Water-Resistive and Air Barrier with integral Flashing Membrane applied over glass mat gypsum sheathing, cement board sheathing, CDX plywood, OSB, concrete or CMU. The system is qualified for application to OSB (oriented strand board) sheathing only in areas shown in the manufacturer's Acceptable Substrates and areas of use Technical Bulletin.
- B. Functional Criteria:
 - 1. General:
 - a. Insulation Board: At system termination, completely encapsulate insulation board edges by mesh reinforced base coat, substrate or drainage track (limited to terminations at foundation). The use of and maximum thickness of insulation board shall be in accordance with applicable building codes and manufacturer requirements.
 - b. Flashing: Flashing shall be continuous and watertight. Flashing shall be designed and installed to prevent water infiltration behind the EIFS. Refer to Division 07 Flashing Section for specified flashing materials.
 - c. The configuration of the water resistive barrier, drainage plane and flashing and system materials, must allow for the egress of incidental moisture.
 - d. See Current ICC Evaluation Service Report or Contact manufacturer's Technical Department for Design Wind loads.
 - e. Inclined surfaces shall follow the guidelines listed below:
 - (1) Minimum slope: 6 in (152 mm) of vertical rise in 12 in (305 mm) of horizontal run.
 - (2) For sloped surfaces, run of slope shall be a maximum of 12 in (305 mm).
 - (3) Usage not meeting above criteria shall be approved by manufacturer prior to installation.
 - f. The building interior shall be separated from the insulation board by ½ in (12.7 mm) of gypsum board or equivalent 15 minute thermal barrier.
 - 2. Performance Requirements
 - a. System to meet the performance and testing requirements of the International Code Council Acceptance Criteria AC 235 and AC 212
 - b. Shall meet the testing requirements of the manufacturer's product performance sheet.
 - 3. Substrate Systems:
 - a. Shall be engineered to withstand applicable design loads including required safety factor.
 - b. Maximum deflection of substrate system under positive or negative design loads shall not exceed L/240 of span except as otherwise approved in writing by the manufacturer prior to installation.

- c. Substrate dimensional tolerance: Flat within ¼ in (6.4 mm) in any 4 ft (122 cm) radius.
 - d. Surface irregularities: Sheathing not over ⅛ in (3 mm); masonry not over 3/16 in (4.8 mm).
4. Impact Resistance Classification: EIFS water drainage system shall be classified in accordance with ASTM E2486 classification and impact ranges as follows.
 - a. Standard Impact Resistance, 25-49 in-lbs (2.8 – 5.6 J) Impact Range, All areas
 - b. High Impact Resistance, 90-150 in-lbs (10.2–17.0 J) Impact Range, to be used over all wall surfaces that are at 10 foot or below to grade (or as shown on drawings)
 5. Expansion Joints: Continuous expansion joints shall be installed at the following locations in accordance with manufacturer's recommendations:
 - a. At building expansion joints.
 - b. At substrate expansion joints.
 - c. At floor lines in wood frame construction.
 - d. Where EIFS panels abut one another. (Panelized Assemblies Only)
 - e. Where EIFS abuts other materials.
 - f. Where significant structural movement occurs, such as at
 - (1) Changes in roof line.
 - (2) Changes in structural system.
 - g. Where substrate changes. (For exceptions to joints at substrate changes, contact the manufacturer's Technical Department)
 - h. Substrate movement and expansion and contraction of EIFS and adjacent materials shall be taken into account in design of expansion joints, with proper consideration given to sealant properties, installation conditions, temperature range, coefficients of expansion of materials, joint width to depth ratios, and other material factors. Minimum width of expansion joints shall be as follows:
 - (1) ½ in (12.7 mm) where EIFS abuts other materials.
 - (2) ¾ in (19 mm) when EIFS abuts the EIFS.
 - (3) Larger width where indicated on drawings.
 6. Manufacturer's Detail and reveals
 - a. EIFS manufacturer's latest published information shall be followed for standard detail treatments.- see drawings
 - b. Non-standard detail treatments shall be as recommended by the manufacturer, approved by the Project Designer and be part of the Contract Documents.
 7. Building Code Conformance: EIFS shall be acceptable for use on this project under building code having jurisdiction.

1.5 SUBMITTALS

- A. General: Submit Samples, Evaluation Reports and Certificates in accordance with Division 01 General Requirements Submittal Section.
- B. Samples: Submit samples for approval. Samples shall be of materials specified and of suitable size as required to accurately represent each color and texture used on project. Prepare each sample using same tools and techniques for actual project application. Maintain and make available, at job site, approved samples.
- C. Manufacturer's Warranty: Submit sample copies of Manufacturer's Warranty indicating Single Source Responsibility.

1.6 QUALITY ASSURANCE

- A. Qualifications:
 1. Manufacturer: Shall have marketed Exterior Insulation and Finish Systems in United States for at

least ten years.

- a. Shall have completed projects of same building size and type as this project.
2. Applicator:
 - a. Shall have attended the manufacturer's educational seminar for installation of system.
 - b. Shall possess a current certificate of education from the manufacturer.
 - c. Shall be experienced and competent in installation of plaster-like materials.
- B. Regulatory Requirements:
 1. Insulation Board: Shall be produced and labeled under a third party quality program as required by applicable building code.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver EIFS water-drainage system products in original packaging with manufacturer's identification.
- B. Storage: Store EIFS materials in a cool, dry location, out of sunlight, protected from weather and other harmful environment, and at a temperature above 40°F (4°C) and below 110°F (43°C) in accordance with manufacturer's instructions. Store insulation board flat.

1.8 PROJECT / SITE CONDITIONS

- A. Installation Ambient Air Temperature: Minimum of 40°F (4°C) and rising, and remain so for 24 hours thereafter.
- B. Substrate Temperature: Do not apply materials to substrates whose temperature are below 40°F (4°C) or contain frost or ice.
- C. Inclement Weather: Do not apply materials during inclement weather, unless appropriate protection is employed.
- D. Sunlight Exposure: Avoid, when possible, installation of the materials in direct sunlight. Application of finishes in direct sunlight in hot weather may adversely affect aesthetics.
- E. Materials shall not be applied if ambient temperature exceeds 120°F (49°C) or falls below 40°F (4°C) within 24 hours of application. Protect materials from uneven and excessive evaporation during hot, dry weather.
- F. Prior to installation, the wall shall be inspected for surface contamination, or other defects that may adversely affect the performance of the materials and shall be free of residual moisture.

1.9 COORDINATION AND SCHEDULING:

- A. Coordination: Coordinate EIFS water-drainage system installation with other construction operations.

1.10 WARRANTY

- A. Warranty: Upon request, at completion of installation, provide manufacturer's standard limited 15 year warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design; Parex USA, Inc., contact Architectural Sales: Jessica Kennedy at email jessica.kennedy@parexusa.com. Brands approved and included: Parex and Lahabra Stucco.
- B. Optimum CI Assembly by Parex USA
- C. Approved manufacturer in accordance with Section 01 25 00

2.2 MATERIALS

- A. Fluid Applied Water-Resistive Barrier:

1. Parex 495 Weather Seal. A fluid applied roll-on or spray on, water resistive barrier coating
 2. Parex 396 Sheathing Tape: Non-woven synthetic fiber tape to reinforce Weather Seal roll on water-resistive barrier at sheathing board joints, into rough openings and other terminations into dissimilar materials available in 4 in, 6 in and 9 in.
 3. Parex 365 Flashing Membrane: Self-sealing, Polyester faced, rubberized asphalt membrane, 30 mils (0.76 mm) thick.
 4. Parex Weather Fill, may be used in lieu of the sheathing tape for sealing of sheathing joints. It is used in conjunction with Parex USA WRBs to fill penetrations, open joints and seams up to 1/2 inch (13mm). It creates transitions where flexible reinforcement is required to bridge gaps and provide continuous support of fluid-applied flashing and water resistive air barriers.
- B. Adhesives
1. Parex 121™ Adhesive: 100% acrylic polymer based, requiring the addition of Portland cement; used as an adhesive to laminate EPS Insulation Board to the roll on water-resistive barrier.
- C. Insulation Board: In compliance with manufacturer's requirements for drainage system EIFS.
1. Produced and labeled under a third party quality program as required by applicable building code; and produced by a manufacturer approved by .
 2. Shall conform to ASTM C578, ASTM E2430, Type I and the specification for Molded Expanded Polystyrene Insulation board.
 3. Maximum size shall be 2 ft x 4 ft (610 mm x 1219 mm).
 4. Thickness: 1.0" to 4", – Larger sizes and shapes as detail on drawings for shape details up to 13" in thickness. Larger shapes may require additional fastening requirements.
 5. Reference drawings and wall sections for special shapes and projections.
- D. Base Coats:
1. 121 Dry-Hi Base Coat: A high impact resistive Copolymer based, factory blend of cement and proprietary ingredients requiring addition of water.
 2. Weather Dry: A waterproof basecoat for use on all horizontal surfaces, stand mesh to be embedded.
- E. Reinforcing Mesh:
1. 355 Standard Mesh: Weight 4.5 oz. per sq. yd. (153 g/sq m); coated for protection against alkali. Standard reinforcement of Parex EIFS, or for use with High Impact 358.14 Mesh, or Ultra High Impact 358.20 Mesh.
 2. 356 Short Detail Mesh: Reinforcing mesh used for backwrapping and details, and to embed in the Parex 121 or 121 Dry Base Coat & Adhesive at the joints in Exterior grade gypsum sheathing.
 3. 352 Self Adhesive Detail Mesh: Reinforcing mesh used for complex details
 4. 358.14 High Impact 14 Mesh: Weight 15 oz. per sq. yd. (509 g/sq m) Reinforcing mesh used with standard mesh; to achieve ASTM E2486 high impact strength. To be utilized at all areas of lower 8' and as shown on drawings.
- F. Primers:
1. Parex USA Primer: 100% acrylic based coating to prepare surfaces for Parex finishes. To be tinted to the same color as the finish.
- G. Finish:
1. Parex DPR Optimum finish, or Variance acrylic finishes- Factory blended acrylic based finishes. Two Coats are required for Fine or Sand Smooth finishes. Textures and CUSTOM dark, deep color to match Architect's sample.
 2. Parex Color Fast Pigment to be utilized on all dark, deep and bright colors.
- H. Parex 369 Drain Edge™: Pre-punched strip of non-woven fabric to allow for drainage at the head and base of system penetrations.
- I. Portland Cement: ASTM C150, Type I or Type I-II.
- J. Water: Potable

2.3 RELATED MATERIALS AND ACCESSORIES

- A. Substrate Materials:
 - 1. Glass mat gypsum sheathing: Minimum ½" thick, conforming to ASTM C1177.
 - 2. Cement Fiber Sheathing: Minimum ½" thick, conforming to ASTM C1325
 - 3. Gypsum Sheathing: Minimum ½" thick, core-treated, weather-resistant, exterior gypsum sheathing complying with ASTM C1396.
 - 4. Plywood: Minimum 7/16 in thick, minimum 4-ply APA-Engineered Wood Association Exposure 1 or Exterior grade C-D or better. Installed with C or better side out gapped 1/8 in at all edges
 - 5. Oriented Strand Board (OSB): 7/16" - 1/2" Wall-16 or Wall-24, approved by the APA, TECO, or PSI/PTL. Stamped as Exposure 1 or Exterior Sheathing with a PS2 or PRP-108 rating.
 - 6. Concrete Masonry Units (CMU): If existing, CMU must be power washed and properly prepared.
 - 7. Concrete (poured or pre-cast).
 - 8. Other Approved by manufacturer in writing prior to the project.
- B. Flashing: Refer to Division 07 Flashing Section for flashing materials.
- C. Sealant System:
 - 1. Manufacturer: Sika USA, Contact Ryan Lorenzo at 303.475.8282 or Lorenzen.ryan@us.sika.com
Seals, Sealants and Bond Breakers: Sealants shall conform to ASTM C 920, Grade NS, Class 25, Use NT. Backer rod shall be closed-cell polyethylene foam.
 - a. Single Component, Sikasil - WS 290, Sikasil – WS 295, Sika Silbridge 300, or Sikasil 728 NS
 - 2 Sealant for perimeter seals around window and door frames and other wall penetrations shall be low modulus, designed for minimum 50% elongation and minimum 25% compression, and as selected by Project Designer.
 - 3 Sealants shall conform to ASTM C920, Grade NS.
 - 4 Expansion joints between sections of EIFS shall have a minimum width of 3/4 in (19 mm).
 - 5 Perimeter seal joints shall be a minimum width of 1/2 in (12.7 mm).
 - 6 Sealant backer rod shall be closed-cell polyethylene foam.
 - 7 Apply sealant to tracks or base coat of EIFS.
 - 8 Refer to current manufacturer bulletins for listing of sealants which have been tested and have been found to be compatible with EIFS.
 - 9 Color shall be as selected by Project Designer.
 - 10 Joint design, surface preparation, and sealant primer shall be based on sealant manufacturer's recommendations and project conditions.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify project site conditions under provisions of Section 01 00 00.
- B. Compliance: Comply with manufacturer's instructions for installation of EIFS water-drainage system.
- C. Substrate Examination: Examine prior to EIFS installation as follows:
 - 1. Substrate shall be of a type approved by the EIFS manufacturer. Plywood and OSB substrates shall be gapped 1/8 in (3.2 mm) at all edges. Cut edges (non-factory edges) must be sealed with a water-resistive coating.
 - 2. Substrate shall be examined for soundness, and other harmful conditions.
 - 3. Substrate shall be free of dust, dirt, laitance, efflorescence, and other harmful contaminants.
 - 4. Substrate construction in accordance with substrate material manufacturer's specifications and applicable building codes.
- D. Sealants and Backer Rod: To be installed, where required, in accordance with the sealant manufacturer's specifications and published literature, and using the sealant manufacturer's recommended primers.
- E. Advise Contractor of discrepancies preventing installation of the EIFS water-drainage system. Do not proceed with the EIFS installation work until unsatisfactory conditions are corrected.

3.2 PREPARATION

- A. Protection: Protect surrounding material surfaces and areas during installation of system.
- B. Clean surfaces thoroughly prior to installation.
- C. On existing Stucco, CMU or Concrete power wash and remove all loose material and foreign matter.
- D. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 MIXING

- A. Mix materials in accordance with manufacturer's instructions.

3.4 APPLICATION

- A. General: Installation shall conform to this specification and the manufacturer's published application guide, technical bulletins, written instructions and drawing details.
- B. Drainage Accessories and Water Resistive Barrier
 - 1. Plywood and OSB substrates cut edges (non-factory edges) must be sealed with a water-resistive coating.
 - 2. Install drainage tracks (limited to terminations at foundations), back-wrap mesh, or edge-wrap mesh at system terminations. Treat all glass mat gypsum sheathing, cement board sheathing, OSB and plywood joints with the roll on water-resistive barrier and embed appropriate sheathing tape.
 - 3. Flash all rough openings with the roll on water-resistive barrier and embedded sheathing tape or flashing membrane.
 - 4. Apply the roll on water-resistive barrier to the surface of the appropriate substrate (Minimum 2 coats on plywood, OSB, concrete and masonry). Over concrete and masonry, a skim coat of base coat materials may be used as the water-resistive barrier.
 - 5. Treat the heads of all window, door and similar openings with EIFS manufacturer's drainage edge and back-wrap mesh to allow for drainage at these locations.
- C. Insulation Board
 - 1. Apply adhesive to backs of insulation boards with a drainage notched trowel, with ribbons of adhesive oriented in a vertical direction (parallel to the 2 ft (61 mm)) dimension of the EPS board). Apply a 1 in (25.4 mm) wide horizontal ribbon of adhesive on the back at the lower edge of insulation boards installed over the drainage edge material.
 - 2. Install insulation board without gaps in a running bond pattern and interlocked at corners.
 - 3. Rasp irregularities off insulation board.
 - 4. Install EPS shapes onto surface of EPS foam.
- D. Apply base coat and fully embed high impact mesh in base coat taking care to butt edges and not overlap. Once dry, apply an additional layer of basecoat and embed the standard mesh. include diagonal mesh patches at corners of openings and reinforcing mesh patches at joints of track sections. Apply multiple layers of base coat and mesh where required for specified impact resistance classification.
- E. Parapets or deep window recesses: Apply basecoat and embed standard mesh, than apply the water proof basecoat and embed an additional layer of mesh.
- F. Apply primer to base coat after drying. Primer is to be tinted the same color as the finish coat.
- G. Finish Coat: Apply finish coat to match specified finish type, texture, and color. Do not apply finish coat to surfaces to receive sealant. Keep finish out of sealant joint gaps. Two coats of finish are required for fine and smooth finishes.

3.5 CLEAN-UP

- A. Removal: Remove and legally dispose of EIFS component debris material from job site.

- B. Clean EIFS surfaces and work area of foreign materials resulting from EIFS operations.

3.6 PROTECTION

- A. Provide protection of installed materials from water infiltration into or behind them.
- B. Provide protection of installed stucco from dust, dirt, precipitation, and freezing during installation.
- C. Provide protection of installed finish from dust, dirt, precipitation, freezing and continuous high humidity until fully cured and dry.
- D. Clean exposed surfaces using materials and methods recommended by the manufacturer of the material or product being cleaned. Remove and replace work that cannot be cleaned to the satisfaction of the Project Designer/Owner.

PRODUCT PERFORMANCE

EIFS Fire Performance	Method	ICC or ASTM Criteria	Results
Surface Burning Characteristics	ASTM E84	Individual components shall each have a flame spread <25, and smoke developed < 450	Flame Spread: 0 to 15 Smoke Developed: 0 to 15
Large-Scale Vertical Fire Spread	ASTM E108	No Requirement	No vertical or horizontal flame spread.
Fire Resistance	ASTM E119	Maintain fire resistance of existing rated assembly	See Current ICC Report
Radiant Heat Exposure	NFPA 268	No ignition @ 20 minutes	Pass
Intermediate Scale Multi-Story Fire Test	NFPA 285(UBC Standard 26-9)	Required for Non-combustible Construction	Pass, See Current ICC Report

EIFS Strength	Method	ICC or ASTM Criteria	Results
Flexural Strength	ASTM C203	No Requirement	60.6 psi (418 kPa)
Falling Ball Impact	ASTM D1037	No Requirement	92 to over 600 in-lbs
Creep Resistance of Adhesive	ASTM D2294	No Requirement	28 days 208 psf shear stress: no creep
Gardner Impact Test	ASTM D2794	No Requirement	25 to 200 in-lbs (mesh weight)
Transverse Wind Load	ASTM E330	Withstand positive and negative wind loads as specified	See Current ICC Report
Impact Load	ASTM E695	No Current Requirement	30 lb. Impact mass; no cracking
Tensile Bond Strength	ASTM E2134	Minimum 15 psi (103kPa)	Pass

EIFS Environmental Durability	Method	ICC or ASTM Criteria	Results
Abrasion Resistance	ASTM D 968	No cracking or loss of film at 528 quarts (500 L) of sand	Pass @ 500 Liters
Accelerated Weathering	ASTM G153 (ASTM G 23) ASTM G154	No deleterious effects* at 2000 hours when viewed under 5x magnification	2000 Hours: no deleterious effect 2000 Hours: no deleterious effect
Drainage Efficiency	ASTM E2273	Greater than 90%	Pass
Freeze/Thaw Resistance	ASTM E 2485	No deleterious effects* at 10 cycles when viewed under 5x magnification	60 cycles: no deleterious effect
Fungus Resistance	MIL STD 810B	No Requirement	28 days: no growth
Mildew Resistance	ASTM D 3273	No growth supported during 28 day exposure period	Pass
Water Penetration	ASTM E 331	No water penetration beyond the plane of the base coat/EPS board interface after 15 minutes at 6.24 psf (299 Pa)	Pass
Moisture Resistance	ASTM D2247	No deleterious effects at 14 day exposure	Pass
Salt Fog Resistance	ASTM B117	No deleterious effects* at 300 hours	500 hours: no deterioration
Wind Driven Rain	F.S. TT-C-555B	No Requirement	24 hours: no penetration of water

*No deleterious effects: no cracking, checking, crazing, erosion, rusting, blistering.

Fluid Applied WRB Testing	Method	ICC and ASTM E2570 Criteria	Results
Accelerated Weathering	AC 212	25 Cycles followed by Hydrostatic Pressure Test: No water penetration on the plane of the exterior facing side of the substrate.	Pass: no water penetration
Air Infiltration	ASTM E2178	Calculated flow Rate at 75 Pa (1.57 lb/ft ² , 0.3 in H ₂ O) = < 0.02 L/m ² *s (< 0.004 cfm/ft ²)	< .00001 L/m ² *s (0.00001 cfm/ft ²) at 75 Pa (1.57 lb/ft ² , 0.3 in H ₂ O)
Air Leakage	ASTM E283	No Criteria	< 0.004 cfm/ft ²
Elongation	ASTM D412	No Criteria	360%
Flexibility	ASTM D522	No Criteria	No Cracking at 1/8" (3 mm)
Freeze-Thaw Resistance	ASTM E 2485	10 Cycles	Pass – No Deleterious Effects
Hydrostatic Pressure Test	AATCC 127 (Water Column)	Resist 21.6 in (55 cm) water for 5 hours before and after aging	Pass: no water penetration
Nail Seal ability, Head of Water	ASTM D1970	No Criteria	Pass 5 inches of water
Racking	ASTM E72	Deflection at 1/8 in (3.2 mm)	Pass -No cracking at field, joints or flashing connection
Restrained Environmental	ICC ES AC 212 / ASTM E2570	5 Cycles of wetting and drying	Pass -No cracking at field, joints or flashing connection
Structural Loading	ASTM E1233 Procedure A	10 Cycles @ 80% design load	Pass -No cracking at field, joints or flashing connection
Surface Burning Characteristics	ASTM E84	ICC and ASTM E2568 Flame Spread <25 Smoke Developed <450	Flame Spread =0 Smoke Developed =0
Tensile Bond Strength	ASTM E 2134/ ASTM C 297	Minimum 15 psi (104 kPa)	Pass all listed substrates and flashing materials
Water Resistance	ASTM D 2247	14 Days	Pass – No Deleterious Effects.
Water Penetration	ASTM E331	2.86 psf (137 Pa) for 15 minutes	Pass 25.4 psf (1216 Pa) for 165 minutes
Water Penetration	ASTM E331	Tested after Structural Loading, Racking and Restrained Environmental Cycling at 2.86 psf (137 Pa) for 15 minutes	No Water Penetration
Water vapor transmission	ASTM E96 Procedure B	Vapor Permeable	12. perms
Weathering	ICC ES AC 212 / ASTM E2570	210 hours of UV Exposure, 25 cycles of accelerated weatherin, 21.6 in (549 mm) water column for 5 hours	Pass
Wind Driven Rain	F.S. TT-C-555B	No Criteria	Pass
VOC	EPA Reference Test Method 24	US EPA, South Coast AQMD and Greenseal Standard	10 g/L
Regional Harvest		LEED MRc 5.1	100% at all facilities

REINFORCING MESH IMPACT RESISTANCE	Classification	Impact Range (in-lbs)
355 Standard Mesh	Standard	25-49
358.10 Intermediate Impact 10 Mesh	Intermediate	50-89
358.14 High Impact 15 Mesh (Plus Standard Mesh)	High	90-150
358.20 Ultra High Impact 20 Mesh /Standard Mesh	Ultra High	>150

END of SECTION 07 24 19: Water Drainage EIFS

SECTION 07 2726 – FLUID APPLIED MEMBRANE AIR BARRIERS

PART 1 -GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes materials and installation of fluid applied waterproof air barrier membrane over vertical above grade concrete walls, concrete masonry walls, and wall sheathing.
 - 1. Related Requirements
 - 2. Section 04 2300: Reinforced Unit Masonry
 - 3. Section 07 4000: Metal Façade-Cladding
 - 4. Section 07 5423.02: Adhered TPO Thermoplastic Membrane Roofing
 - 5. Section 07 6000: Sheet Metal Flashing and Trim
 - 6. Section 07 9000: Joint Protection
 - 7. Section 08 4113: Entrances and Store Fronts

1.3 DEFINITIONS

- A. Air Barrier Material: A primary element that provides a continuous barrier to the movement of air.
- B. Air Barrier Accessory: A transitional component of the air barrier that provides continuity.
- C. Air Barrier Auxiliary Material: A transitional component that provides air barrier continuity furnished by a source other than the primary air barrier manufacturer.
- D. Air Barrier Assembly: The collection of air barrier materials, accessory and auxiliary materials applied to an opaque wall, including joints and junctions to abutting construction, to control air movement through the wall

1.4 PRE-INSTALLATION MEETINGS

- A. Pre-installation Conference
 - 1. Review air barrier installation requirements and installation details, mock-ups, testing requirements, protection, and sequencing of work.

1.5 REFERENCES

- A. Building Code and Material Evaluation Service Standards
 - 1. ICC ES AC 212 – March 1, 2005, ICC Acceptance Criteria for Water-Resistive Coatings Used as Water-Resistive Barriers over Exterior Sheathing
 - 2. May, 1997, CCMC (Canadian Construction Materials Centre) Technical Guide for Air Barrier Material
 - 3. 2009 IBC, International Building Code
 - 4. 2009 IRC, International Residential Code
 - 5. 2009 IECC, International Energy Conservation Code
- B. ASTM Standards
 - 1. C 297-94, Test Method for Tensile Strength of Flat Sandwich Constructions in Flatwise Plane
 - 2. C 1177-08, Specification for Glass Mat Gypsum Substrate for Use as Sheathing

3. D 522-93a, Test Methods for Mandrel Bend Test of Attached Organic Coatings
 4. D 1970-00, Standard Specification for Self-Adhering Polymer Modified
 5. Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
 6. D 3273-00, Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
 7. D 4541-09, Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
 8. E 84-98, Test Method for Surface Burning Characteristics of Building Materials
 9. E 96-00, Test Method for Water Vapor Transmission of Materials
 10. E 119-98, Standard Test Methods for Fire Tests of Building Construction and Materials
 11. E 779-10, Standard Test Method for Determining Air Leakage Rate by Fan Pressurization
 12. E 783-02, Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors
 13. E 1186-03 (2009), Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems
 14. E 1827-96 (2007), Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door
 15. E 2178-03, Test Method for Air Permeance of Building Materials
 16. E 2357-05, Standard Test Method for Determining Air Leakage of Air Barrier Assemblies
- C. APA - The Engineered Wood Association
1. E30U-2007, Engineered Wood Construction Guide
- D. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE)
1. 2005 ASHRAE Handbook--Fundamentals
 2. ASHRAE 90.1 – 2010, Energy Standard for Buildings Except Low-Rise Residential Buildings
 3. ASHRAE 189.1 – 2009, Standard for the Design of High Performance Green Buildings Except Low-Rise Residential Buildings
- E. National Fire Protection Association (NFPA)
1. NFPA 285, Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components
- F. South Coast Air Quality Management District (SCAQMD)
1. Rule 1113 (2007) – Architectural Coatings

1.6 COORDINATION/SCHEDULING

- A. Coordinate installation of foundation waterproofing, roofing membrane, windows, doors and other wall penetrations to provide a continuous air barrier.
- B. Provide protection of rough openings before installing windows, doors, and other penetrations through the wall.
- C. Provide sill flashing to direct water to the exterior before windows and doors are installed.
- D. Install window and door head flashing immediately after windows and doors are installed.
- E. Install diverter flashings wherever water can enter the assembly to direct water to the exterior.
- F. Install parapet cap flashing and similar flashing at copings and sill to prevent water entry into the wall assembly.
- G. Install cladding within 180 days of waterproof air barrier installation.

1.7 SUBMITTALS

- A. Manufacturer's specifications, details and product data.
- B. Manufacturer's standard warranty.
- C. Manufacturer's ICC evaluation report confirming compliance with the IBC, IRC, and IECC as an air barrier and water-resistive barrier.
- D. Samples for approval as directed by architect or owner.
- E. Shop drawings: substrate joints, cracks, flashing transitions, penetrations, corners, terminations, and tie-ins with adjoining construction, interfaces with separate materials that form part of the air barrier assembly.

1.8 QUALITY ASSURANCE

- A. Manufacturer requirements
 - 1. Manufacturer of exterior wall waterproof air barrier materials for a minimum of 30 years in North America.
 - 2. ISO 9001:2000 Certified Quality System and ISO 14001:2004 Certified Environmental Management System
- B. Contractor requirements
 - 1. Knowledgeable in the proper use and handling of Parex materials.
 - 2. Employ skilled mechanics who are experienced and knowledgeable in waterproofing and air barrier application, and familiar with the requirements of the specified work.
 - 3. Provide the proper equipment, manpower and supervision on the jobsite to install the air barrier assembly in compliance with the project plans & specifications, shop drawings, and Parex's published specifications and details.
- C. Regulatory Compliance
 - 1. Primary air barrier and joint treatment reinforcement materials:
 - a. Listed by IBC and recognized for use on all types of construction.
 - b. Listed by CCMC and recognized for use on all types of construction.
 - c. Comply with VOC requirements of SCAQMD Rule 1113.
 - d. Comply with ASHRAE 90.1 – 2010
 - e. Comply with ASHRAE 189.1 - 2009
- D. Mock-ups
 - 1. Build stand-alone site mock up or sample wall area on as-built construction to incorporate back-up wall construction, typical details covering substrate joints, cracks, flashing transitions, penetrations, corners, terminations, tie-ins with adjoining construction, and interfaces with separate materials that form part of the air barrier assembly.

1.9 PRE-CONSTRUCTION TESTING

- A. Conduct testing by qualified test agency or building envelope consultant
 - 1. Conduct assembly air leakage testing in accordance with ASTM E 783.
 - 2. Conduct adhesion testing to substrates in accordance with ASTM D 4541.
 - 3. Conduct wet sealant compatibility testing in accordance with sealant manufacturer's field quality control test procedure.
 - 4. Notify design professional minimum 7 days prior to testing.

1.10 DELIVERY, STORAGE AND HANDLING

- A. Deliver all materials in their original sealed containers bearing manufacturer's name and identification of product.
- B. Protect coatings (pail products) from freezing temperatures and temperatures in excess of 90 degrees F (32 degrees C). Store away from direct sunlight.
- C. Protect Portland cement based materials (bag products) from moisture and humidity. Store under cover off the ground in a dry location.
- D. Protect and store accessory and auxiliary products in accordance with manufacturer's written instructions.

1.11 PROJECT/SITE CONDITIONS

- A. Maintain ambient and surface temperatures above 40 degrees F (4 degrees C) during application and drying period, minimum 24 hours after application of waterproof air barrier materials.
- B. Provide supplementary heat for installation in temperatures less than 40 degrees F (4 degrees C) or if surface temperature is likely to fall below 40 degrees F (4 degrees C).
- C. Provide protection of surrounding areas and adjacent surfaces from application of materials.

1.12 WARRANTY

- A. Provide manufacturer's standard warranty.

PART 2 -PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: Parex Corp.
- B. BASF Construction Chemicals- phone: 904-996-6074.
- C. Approved Manufacturer/assembly:
 - 1. Weather Tech, as manufactured by Parex.
 - 2. Perm-A-Barrier® VP, as manufactured by Grace Construction Products.
- D. Prior Approvals: Subject to compliance with requirement, products of equal performance may be used based on the architect's review of submittals per Section 01 6300 "Product Substitution Procedures."
- E. Obtain primary air barrier and accessory air barrier materials from single source.

2.2 MATERIALS

- A. Primary Air Barrier Material: ready-mixed flexible spray or roller applied waterproof air barrier membrane material
- B. Accessory Materials
 - 1. Joint Treatments
 - a. Ready mixed flexible trowel or spray applied air barrier material.
 - b. Mesh: moisture cure elastomeric waterproof air barrier material.
 - c. Fabric: flexible waterproof air barrier membrane material
 - 2. Joint Reinforcements

- a. Mesh: nominal 4.2 oz/yd² (142 g/m²) self-adhesive, flexible, symmetrical, interlaced glass fiber reinforcing mesh, with alkaline resistant coating for compatibility with Sto materials.
 - b. Fabric: non-woven integrally reinforced cloth reinforcement.
3. Transition Membranes
- a. Mesh: ready mixed flexible trowel or spray applied air barrier material with treated glass fiber reinforcing mesh.
4. Primers
- a. Primer: rubber resin emulsion primer. Tape to enhance adhesion and allow installation down to 35 degrees F (1.7 degrees C).
- C. Auxiliary Materials
- 1. Wet sealant: Dow Corning 790, 791, and 795 sealants
 - 2. Pre-cured sealant tape: Dow 123
 - 3. Spray adhesive: 3M Super 77 Spray Adhesive
 - 4. Spray foam: Dow Great Stuff for Gaps and Cracks
- D. Patching and Leveling Material for Concrete and Masonry
- 1. Leveler: polymer modified cementitious patch and leveling material for prepared concrete and masonry surfaces up to 3/8 inch (10 mm).
 - 2. Polymer modified lightweight cementitious patch and leveling material for prepared concrete and masonry surfaces up to 1/8 inch (3 mm).

2.3 PERFORMANCE REQUIREMENTS

- A. Durability, resistance to aging, water and water penetration resistance, structural loading: joint treatment and primary air barrier material, comply with ICC ES AC 212
- B. Flexibility: ASTM D 522, primary air barrier material, no cracking or delamination before and after aging using 1/8 inch (3 mm) mandrel at 14° F (10° C)
- C. Nail seal ability: ASTM D 1970, 7.9.1, primary air barrier passes
- D. Material air leakage: ASTM D 2178, primary air barrier and joint treatment < 0.004 cfm/ft² at 1.57 psf (0.02 L/s·m² at 75 Pa)
- E. Resistance to mold: ASTM D 3273, no mold growth after 28 day exposure
- F. Adhesion: joint treatment and primary air barrier material, ASTM C 297 or D 4541, > 30 psi (207 kPa), or exceeds strength of glass mat facing on glass mat gypsum substrates
- G. Surface burning: ASTM E 84, joint treatment and primary air barrier material flame spread < 25, smoke developed < 450, Class A building material
- H. Water vapor permeance: ASTM E 96 Method B, > 1 perm (57 ng/Pa·s·m²)
- I. Fire resistance: ASTM E 119, meets requirements for a 1-hour fire-resistive rating when tested with up to 4 inches (102 mm) of continuous foam plastic insulation in a non-load-bearing steel frame wall assembly
- J. Fire propagation: NFPA 285, meets requirements for use on all Types of construction with up to 12 inches (305 mm) of continuous EPS foam plastic insulation without height restriction
- K. Assembly air leakage: ASTM E 2357, < 0.04 cfm/ft² (0.2 L/s·m²) air leakage after conditioning protocol

- L. Field adhesion testing: ASTM D 4541, > 30 psi (207 kPa) or exceeds strength of glass mat facing on glass mat gypsum substrates
- M. Building envelope air leakage: ASTM E 779 or 1827, < 0.4 cfm/ft² (2 L/s·m²)
- N. Volatile Organic Compounds: SCAQMD Rule 1113, joint treatment and primary air barrier material < 100 g/L
- O. Water-resistive barrier: ICC ES 212, joint treatment and primary air barrier comply and are listed in a valid ICC ESR.

2.4 DESIGN CRITERIA

- A. Structural (Wind and Axial Loads)
 - 1. Design for maximum allowable deflection normal to the plane of the wall: L/240.
 - 2. Design for wind load in conformance with code requirements.
- B. Moisture Control
 - 1. Prevent the accumulation of water in the wall assembly and behind the exterior wall cladding:
 - a. Minimize condensation within the assembly.
 - b. Drain water directly to the exterior where it is likely to penetrate components in the wall assembly (windows and doors, for example).
 - c. Provide corrosion resistant flashing to direct water to the exterior in accordance with code requirements, including: above window and door heads, beneath window and door sills, at roof/wall intersections, floor lines, decks, intersections of lower walls with higher walls, and at the base of the wall.
- C. Air Barrier Continuity: provide continuous air barrier assembly of compatible air barrier components.
- D. Substrates
 - 1. Concrete Masonry Units: provide normal weight units with flush joints (struck flush with the surface) and allow for a minimum of 2 coats of the primary air barrier material, or a cementitious parge coat to fill and level irregular surfaces and 1 coat of the primary air barrier material, prior to the air barrier application, such that a void and pinhole free air barrier surface is achieved.
- E. Mechanical Ventilation: maintain pressurization and indoor humidity levels in accordance with recommendations of ASHRAE (see 2005 ASHRAE Handbook—Fundamentals).

PART 3 -EXECUTION

3.1 EXAMINATION

- A. Inspect concrete and concrete masonry surfaces for:
 - 1. Contamination — algae, dirt, dust, efflorescence, form oil, fungus, grease, mildew or other foreign substances.
 - 2. Surface deficiencies – weak, friable, chalkiness, laitance, bug holes, and spalls.
 - 3. Cracks — measure crack width and record location of cracks.
 - 4. Damage or deterioration.
 - 5. Moisture content and moisture damage — use a moisture meter to determine if the surface is dry enough to receive the waterproof air barrier and record any areas of moisture damage or excess moisture.
 - 6. Flush masonry mortar joints completely filled with mortar.

- B. Inspect sheathing application for compliance with applicable requirement:
 - 1. Exterior Grade and Exposure I wood based sheathing: E30U-2007, Engineered Wood Construction Guide, and the requirements of the applicable building code.
 - 2. Glass mat faced gypsum sheathing in compliance with ASTM C 1177: consult manufacturer's published recommendations and ICC ES Report. Conform with project requirements for wind load resistance.
 - 3. Cementitious sheathing — Consult manufacturer's published recommendations and ICC ES Report. Conform with project requirements for wind load resistance.
- C. Report deviations from the requirements of project specifications or other conditions that might adversely affect the waterproof air barrier installation. Do not start work until deviations are corrected.

3.2 SURFACE PREPARATION

A. Concrete Masonry

- 1. Remove surface contamination and weak surface conditions. Use chemical cleaners such as TSP (trisodium phosphate) detergent to remove oil and grease and rinse with potable water. Use chemical cleaners to remove efflorescence or other surface contamination in accordance with manufacturer's written instructions. Use mechanical methods such as water blasting, sandblasting, and wire brushing to remove weak surface conditions.
- 2. Repair cracks up to 1/8 inch (3 mm) wide by raking with a sharp tool to remove loose, friable material and blow clean with oil-free compressed air. Apply joint treatment material over crack, embed reinforcement (where applicable), and smooth joint treatment material with a trowel, drywall or putty knife to cover the reinforcement.
- 3. Remove projecting fins, ridges, and mortar by mechanical means. Remove excess mortar from masonry ties, lintels and shelf angles.
- 4. Fill honeycombs, aggregate pockets, holes and other voids with patching material.

B. Sheathing

- 1. Remove and replace damaged sheathing.
- 2. Spot surface defects such as over-driven fasteners, knot holes, or other voids in sheathing with knife grade joint treatment material.
- 3. Spot fasteners with knife grade or coating joint treatment material.

3.3 INSTALLATION

- A. Coordinate work with other trades to ensure air barrier continuity with connections at foundation, floor lines, flashings, lintels and shelf angles, openings and penetrations such as pipes, vents, windows and doors, masonry anchors, rafters or beams, joints in construction, projections such as decks and balconies, and roof line.
- B. Rough opening protection (select one):
 - 1. Install transition membrane into and around rough opening.
- C. Sheathing joints
 - 1. Install joint treatment material with applicable reinforcement over sheathing joints.
- D. Transitions
 - 1. Install air barrier accessory materials (with reinforcement where applicable), or auxiliary material at transition areas: foundation, floor lines, flashings, lintels and shelf angles,

openings and penetrations such as pipes, vents, windows and doors, masonry anchors, rafters or beams, joints in construction, projections such as decks and balconies, and roof line

E. E. Waterproof air barrier membrane

1. Concrete – install one coat of continuous film of 10 wet mils to the prepared concrete substrate. Do not install over working or moving joint sealants.
2. Concrete Masonry - install one liberal coat of continuous film to the prepared concrete masonry substrate. Backroll spray applications. Allow to dry. Install a second liberal coat in a uniform, continuous film, and backroll spray applications, to achieve a void and pinhole free surface. Depending on the condition of the surface a minimum of 10 wet mils up to a maximum of 30 wet mils per coat is required. Apply additional coats if needed to achieve a void and pinhole free surface. Do not install over working or moving joint sealants.

IMPORTANT NOTE: The number of coats and thickness is highly dependent on CMU composition, unit weight (lightweight or normal weight), porosity, joint profile, and other variables that may exist. For “rough” CMU wall surfaces skim coat the entire wall surface with the leveling material to fill and level the surface prior to applying the waterproof air barrier membrane and transition materials. When a skim coat of the leveling material is installed only one coat of the waterproof air barrier membrane is typically required. Use the mock-up and site tests as the basis for the work.

3. Sheathing

- a. Glass mat faced gypsum sheathing: install one coat of continuous film of 10 wet mils to the prepared glass mat gypsum substrate to achieve a void and pinhole free surface. Do not install over working or moving joint sealants.
- b. Plywood sheathing: install one coat continuous film of 10 wet mils to the prepared substrate to achieve a void and pinhole free surface. Do not install over working or moving joint sealants.
- c. OSB sheathing: install one coat of continuous film of 10 wet mils to the prepared substrate and allow to dry. Install a second coat in a uniform, continuous film of 10 wet mils to achieve a void and pinhole free surface. Do not install over working or moving joint sealants.

3.4 FIELD QUALITY CONTROL

- A. Owner’s qualified testing agency or building envelope consultant shall perform inspections and tests.
- B. Inspections: air barrier materials are subject to inspection to verify compliance with requirements.
 1. Condition of substrates and substrate preparation.
 2. Installation of primary air barrier material, accessory materials, and compatible auxiliary materials over structurally sound substrates and in conformance with architectural design details, contractor’s shop drawings, project mock-up, and manufacturer’s written installation instructions.
 3. Air barrier continuity and connections without gaps and holes at foundation, floor lines, flashings, lintels and shelf angles, openings and penetrations such as pipes, vents, windows and doors, masonry anchors, rafters or beams, joints in construction, projections such as decks and balconies, and roof line.
- C. Tests: air barrier materials and assembly are subject to tests to verify compliance with performance requirements:
 1. Qualitative air leakage test: ASTM E 1186
 2. Quantitative air leakage test: ASTM E 779, E 783, and E 1827

3. Adhesion test: ASTM D 4541
 4. Qualitative adhesion and compatibility testing: wet sealant manufacturer's field quality control adhesion test
- D. Repair non-conforming substrates and air barrier material installation to conform with project requirements.
 - E. Take corrective action to repair and replace, reinstall, seal openings, gaps, or other sources of air leakage to conform with project performance requirements.

3.5 PROTECTION AND CLEANING

- A. Protect air barrier materials from damage during construction caused by wind, rain, freezing, continuous high humidity, or prolonged exposure to sun light.
- B. Protect air barrier materials from damage from trades, vandals, and water infiltration during construction.
- C. Repair damaged materials to meet project specification requirements.
- D. Clean spills, stains, soiling from finishes or other construction materials that will be exposed in the completed work with compatible cleaners.
- E. Remove all masking materials after work is completed.

END OF SECTION 07 2726

SECTION 07 4133 – METAL WALL AND SOFFIT PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY.

- A. Work described in this section includes concealed fastener, lap-seam pre-formed metal soffit panel system complete with perimeter and penetration flashing and closures.
- B. Related work specified elsewhere:
 - 1. Structural steel.
 - 2. Exterior sheathing.
 - 3. Rough carpentry.
 - 4. Flashing and sheet metal. (Not wall panel related).
 - 5. Air barrier and vapor retarder.
 - 6. Sealants.
 - 7. Division 26- Electrical Lighting

1.3 DEFINITIONS

- A. American Architectural Manufacturer Association (AAMA):
 - 1. AAMA 621-96: Voluntary/Standard Specifications for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized (HDG) & Zinc-Aluminum Coated Steel Substrates
- B. American Iron and Steel Institute (AISI):
 - 1. S100-07: 2007 Edition of the North American Specification for the Design of Cold-Formed Steel Structural Members.
- C. American Society for Testing and Materials (ASTM):
 - 1. A653-03: Specification for Steel Sheet, Zinc-coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - 2. A755-03: Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
 - 3. A792-03: Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
 - 4. B209-02a: Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- D. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
 - 1. Architectural Sheet Metal Manual, 6th edition.

E. National Association of Architectural Metal Manufacturers (NAAMM)

1. Metal Finishes Manual for Architectural and Metal Products

1.4 DESIGN AND PERFORMANCE CRITERIA.

- A. General Performance: Metal wall and soffit panel assemblies shall be furnished and installed without failure due to defective manufacture, fabrication, installation, or other defects in construction.

1.5 SUBMITTALS.

- A. Shop drawings: Show wall and soffit panel system with flashings and accessories in plan, sections, and details. Include metal thicknesses and finishes, panel lengths, joining details, anchorage details, flashings and special fabrication provisions for termination and penetrations. Indicate relationships with adjacent and interfacing work. Shop drawings to be prepared by metal wall panel manufacturer.

- B. Not Used.

- C. Warranty: Provide unexecuted specimen warranty documents for each warranty as required in specification article 1.10.

- D. Samples.

1. Submit sample of panel section, at least 6" x 6" showing seam profile, and also a sample of color selected.
2. Submit sample field applied sealants and all other system components.

1.6 QUALITY CRITERIA/INSTALLER QUALIFICATIONS.

- A. Engage an experienced metal wall and soffit panel contractor (erector) to install wall panel system who has a minimum of three (3) years experience specializing in the installation of metal wall systems.

- B. Contractor must be certified by manufacturer specified as a supplier of the metal wall system and obtain written certification from manufacturer that installer is approved for installation of the specified system.

- C. Successful contractor must obtain all components of wall system from a single manufacturer. Any secondary products that are required which cannot be supplied by the specified manufacturer must be recommended and approved in writing by primary manufacturer prior to bidding.

- D. Fabricator/Installer shall submit work experience.

1.7 DELIVERY, STORAGE, AND HANDLING.

- A. Inspect materials upon delivery.

- B. Handle materials to prevent damage.

- C. Store materials off ground providing for drainage; under cover providing for air circulation; and protected from any debris.

1.8 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit metal wall panel work to be performed according to manufacturer's written instructions and warranty requirements.
- B. Field Measurements: Verify actual dimensions of construction contiguous with metal wall and soffit panels by field measurements before fabrication.

1.9 COORDINATION

- A. Coordinate metal soffit panels with flashing, trim, installation of electrical lighting, and construction of other adjoining work to provide a leak proof, secure, and noncorrosive installation.

1.10 WARRANTIES

- A. Endorse and forward to owner the following warranties:
 - 1. Manufacturer's standard 20-year finish warranty covering checking, crazing, peeling, chalking, fading, and adhesion of the pre-painted sheet metal materials.
 - 2. Installer's 3-year warranty covering wall panel system installation and watertightness.
- B. Warranties shall commence on date of substantial completion.

PART 2 - PRODUCTS

2.1 MANUFACTURER OF METAL FACIA AND SOFFIT PANELS

- A. Basis of Design: IMETCO FW concealed fastener, interlocking flush seam wall panel system as manufactured by Innovative Metals Company, Inc. (IMETCO), Norcross, Georgia, telephone 1-800-646-3826.
- B. Subject to compliance with requirements, products of equal performance may be used based on the architect's review of submittals per section 01 6300 "product substitution procedures," including Manufacturer's literature; certification of testing in accordance with specification requirements and sections 1.4 and 1.5; sample warranties in accordance with specification section 1.10; installer qualifications in accordance with specification section 1.6, and a list of five (5) similar projects in size and scope of work.
- C. General: Provide factory-formed metal wall panels designed to be field assembled by interlocking seams and incorporating concealed fasteners.
 - 1. Characteristics.
 - a. Fabrication: Panels shall be factory formed from specified metal.
 - b. The standard profile shall be flat pans with flush seams.
 - c. Not used.
 - d. Configuration: Panel shall be 24-inches wide nominal, with interlocking seams incorporating concealed fasteners.
 - e. Panel Depth (Concealed Leg Height): 1 inch (25 mm), nominal.
 - f. Not used.

- g. Panel length: Up to 20 feet (6.1 m) maximum recommended length.

2.2 PANEL MATERIALS

- A. Painted, metallic-Coated Steel Sheet: Restricted flatness steel sheet metallic coated by the hot-dip process and pre-painted by the coil-coating process to comply with ASTM A755/A755M.
 - 1. Recycled Content: Provide steel sheet with average recycled content such that postconsumer recycled content plus one-half of pre-consumer recycled content is at least 70 percent.
 - 2. 24-gauge, Zinc-Coated (Galvanized) Steel Sheet, as per ASTM A653: G90 (Z275) coating designation; structural quality, grade 40 ksi (275 MPa).
 - 3. Texture: Smooth surface.
 - 4. Exposed Coil-Coated Finish:
 - a. 2-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Manufacturers' approved applicator to prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - b. Coating system shall provide nominal 1.0 mil (0.025 mm) dry film thickness, consisting of primer and color coat.
 - c. Color shall be IMETCO's Epic Bronze.
 - 5. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).

2.3 METAL SUSPENSION SYSTEMS

Location: Exterior canopies as shown on drawings

A. Components:

Main beams and cross tees, base metal and end detail, fabricated from commercial quality hot dipped galvanized steel complying with ASTM A 653. Main beams and cross tees are double-web steel construction with type exposed flange design. Exposed surfaces chemically cleansed, capping prefinished galvanized steel in baked polyester paint. Main beams and cross tees shall have rotary stitching.

- a. Structural Classification: ASTM C 635 Heavy Duty.

- b. Color: Black and match the actual color of the selected ceiling tile, unless noted otherwise.

B. Attachment Devices:

Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.

C. Wire for Hangers and Ties:

ASTM A 641, Class 1 zinc coating, soft annealed, with a yield stress load of at least time three design load, but not less than 12 gauge.

D. NOT USED

E. Suspension Accessories: as required for complete installation in location(s) as shown on drawings.

2.3 MISCELLANEOUS METAL FRAMING

- A. Miscellaneous Metal Framing, General: ASTM C 645, cold-formed metallic-coated steel sheet, ASTM A 653, G90 (Z275) hot-dip galvanized
- B. Fasteners for Miscellaneous Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten miscellaneous metal framing members to substrates.

2.4 SUBSTRATE BOARD

- A. Exterior Grade Gypsum Sheathing Board:
Type and Thickness: 1/2 inch (13 mm)]. The top surface of the substrate board shall be pre-primed to provide for adhesion of the self-adhering underlayment material.
- B. Substrate-Board Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FMG 4470, designed for fastening substrate board to structure.

2.5 UNDERLAYMENT MATERIALS

- A. Self-Adhering with reinforcing scrim, Vapor Impermeable, High-Temperature Sheet: 50-mils- (1.3-mm-) thick minimum, consisting of slip-resisting top surface laminated to SBS-modified asphalt adhesive, with release-paper backing; cold applied.
 - 1. Thermal Stability: Stable after testing at 250 deg F (121 deg C); ASTM D 1970.
 - 2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F (29 deg C); ASTM D 1970.
 - 3. Seams shall be lapped in accordance with manufacturer's recommendations.
 - 4. Underlayment shall be approved for 90 days (minimum) of exposure to UV and weather penetrations.
 - 5. Products: Subject to compliance with requirements, provide one of the following:
 - a. Aqua Block 50 by IMETCO of Norcross, GA.

- b. Aqua Block 60 by IMETCO of Norcross, GA
- c. Dry-Dek by IMETCO of Norcross, GA.

2.6 MISCELLANEOUS MATERIALS

- A. Concealed fasteners: Corrosion resistant steel screws, #10 minimum diameter x length appropriate for substrate, hex washer head or pancake head. Use self-drilling, self-tapping for metal substrate or A-point for plywood substrate.
- B. Exposed fasteners: 3xx series stainless steel screws (cadmium or zinc coatings are not acceptable) with neoprene sealing washer, or 1/8-inch- (3-mm-) diameter stainless steel rivets.

2.7 ACCESSORIES

- A. Flashing and Trim: Formed from same material and gauge as wall panels, pre-painted with coil coating. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, head, sill, corners, jambs, framed openings, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal wall panels.

2.8 FABRICATION

- A. Fabricate and finish metal wall panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes and as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.
- B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- C. Form flashing components from full single width sheet in minimum 10'-0" (3 m) sections. Provide mitered trim corners, joined using closed end pop rivets and butyl-based, solvent released one-part sealant.
- D. Sheet Metal Accessories: Fabricate flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of item indicated.
 - 1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
 - 2. Sealed Joints: Form nonexpanding but movable joints in metal to accommodate butyl-based sealant to comply with SMACNA standards.
 - 3. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
 - 4. Fabricate cleats and attachment devices of size and metal thickness recommended by SMACNA's "Architectural Sheet Metal Manual" or by metal wall panel manufacturer for application, but not less than thickness of metal being secured.

2.9 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - PREPARATION & EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal wall panel supports, and other conditions affecting performance of the Work.
- B. Not used.
- C. Examine solid soffit sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal wall panel manufacturer.
- D. Examine roughing-in for components and systems penetrating metal wall panels to verify actual locations of penetrations relative to seam locations of metal wall panels before metal wall panel installation.
- E. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- F. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of substances harmful to insulation, including removing projections capable of interfering with insulation attachment.
- B. Miscellaneous Framing: Install sub-framing, furring, and other miscellaneous wall panel support members and anchorage according to metal wall panel manufacturer's written instructions.
- C. Establish straight, side and crosswise benchmarks
- D. Use proper size and length fastener for strength requirements. A low-profile fastener head of approximately 1/8-inch (3 mm) maximum is allowable beneath the panel.
- E. Not used.
- F. Not used.

3.3 NOT USED

3.4 UNDERLAYMENT INSTALLATION

- A. Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply over entire wall surface, wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches (150 mm) staggered 24 inches (610 mm) between courses. Overlap side edges not less than 3-1/2 inches (90 mm). Roll laps with roller. Cover underlayment within 90 days.

3.5 METAL FACIA PANEL INSTALLATION

- A. All details will be shown on in accordance with approved shop drawings and manufacturer's product data, within specified erection tolerances.
- B. Directly over the completed soffit substrate, fasten the female flange of the panel. All panels will be fastened into the structural wall substrate at 24-inches (600-mm) on center, maximum.
- C. Isolate dissimilar metals and stucco from metals with bituminous coating. Use gasketed fasteners where required to prevent corrosive action between fastener, substrate, and panels.
- D. Seal laps and joints in accordance with wall panel system manufacturer's product data.
- E. Coordinate flashing and sheet metal work to provide weathertight conditions at wall terminations. Fabricate and install in accordance with standards of SMACNA Manual.
- F. Provide for temperature expansion/contraction movement of panels at soffit penetrations and soffit mounted equipment in accordance with system manufacturer's product data and design calculations.
- G. Installed system shall be true to line and plane and free of dents, and physical defects. In light gauge panels with wide flat surfaces, some oil canning may be present. Oil canning does not affect the finish or structural integrity of the panel and is therefore not cause for rejection.
- H. At joints in linear sheet metal items, set sheet metal items in two ¼-inch- (6-mm-) beads of butyl sealant. Extend sealant over all metal surfaces. Mate components for positive seal. Allow no sealant to migrate onto exposed surfaces.
- I. Remove damaged work and replace with new, undamaged components.
- J. Touch up exposed fasteners using paint furnished by the panel manufacturer and matching exposed panel surface finish.
- K. Clean exposed surfaces of wall panels and accessories after completion of installation. Leave in clean condition at date of substantial completion. Touch up minor abrasions and scratches in finish.

3.6 ERECTION TOLERANCES

- A. Installation Tolerances: Shim and align metal wall panel units within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) at location lines as indicated and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.7 FIELD QUALITY CONTROL

- A. Not used.
- B. Remove and replace applications of metal wall panels where inspections indicate that they do not comply with specified requirements.
- C. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.8 CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as metal wall panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of metal wall panel installation, clean finished surfaces as recommended by metal wall panel manufacturer. Maintain in a clean condition during construction.
- B. Replace metal wall panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 4113

SECTION 07 54 23 - 80 MIL INDUCTION WELDED TPO SYSTEM

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions, general project requirements, and Division 1 Specification Sections, apply to this Section.

1.02 SCOPE OF WORK

- A. Furnish and install an 80 mil, white, polyester scrim reinforced, TPO elastomeric sheet roofing membrane system. Membrane shall be a TPO polymer membrane. Installed system shall include: inducted welded plates & fasteners, insulation, flashing, sealants and all accessories and labor necessary for a complete insulated sheet roofing assembly.
- B. Furnish and install this membrane roofing system in strict accordance with Drawings and Specifications approved by Roof Systems Manufacturer. If conflicts in application arise, material will be installed in accordance with the strictest requirement between the specifications, drawings and the manufacturer's strictest recommendations.
- C. Related Sections:
 - 1. Section 01 41 00 Quality Requirements
 - 2. Section 06 10 00- Rough Carpentry
 - 3. Section 07 62 00 – Sheet Metal Flashing and Trim
 - 4. Section 07 71 00 – Roof Accessories
 - 5. Section 07 92 00 – Joint Sealants

1.03 REFERENCES

- A. IBC-International Building Code-Roofing Related Sections
- B. ASTM – American Society for Testing and Materials.
- C. Factory Mutual (FM) Engineering Corporation - Roof Assembly Classifications.
- D. ASCE-7-10 American Society of Civil Engineers-Wind Load Pressure Calculation Procedures
- E. NRCA – National Roofing Contractors Association.
- F. SMACNA – Sheet Metal and Air Conditioners National Association.
- G. Underwriters Laboratories (UL) - Fire Hazard Classifications.
- H. FS – Federal Standard
- I. ANSI / SPRI ES-1 - (see also, Current IBC Section 1504.5)

1.04 BIDDER'S REPRESENTATION

- A. A large part of the value of this work is contained in the bidder's and the bidder's proposed manufacturer's capacity to provide long-term responsibility for the satisfactory performance of the roof. A 20-year, no dollar limit warranty for the benefit of the Owner is required. To that end, the following requirements are essential provisions of this specification:
1. By offering a bid for this work, the bidder certifies that he has visited the site and determined that all the conditions of the surrounding and underlying work are consistent with his proposed manufacturer's requirements for the specified warranty. In the event that the bidder discovers any condition of the surrounding and underlying work that would prevent him or his manufacturer from providing the specified warranty, he shall report it to the design professional not less than ten days prior to the bid opening.
 2. By offering a bid for this work, the bidder certifies that he has examined the Contract Documents, can meet all imposed time completion requirements and has found all the details and requirements of the scope of work are complete and consistent with his proposed manufacturer's requirements for the specified warranty. In the event that the bidder discovers any detail or requirement in the Contract Documents that would prevent him or his manufacturer from providing the specified warranty, he shall report it to the design professional not less than ten days prior to the bid opening.
 3. By offering a bid for this work, the bidder certifies that he can, within ten calendar days of a notice of award from the Insurer, provide a surety bond for the performance of the work, a surety bond for payment of labor and materials, and a specimen warranty certificate from the manufacturer whose system that is proposed to be used on the project.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications
1. The manufacturer of the roofing system shall be the actual manufacturer of the roofing materials. The insulation and the component materials can be made by others, all testing requirements and implied warranties must be verifiable and labeled under the roofing manufacturer's name. All manufacturers and sub-manufacturers shall have not less than fifteen (15) years experience in the production of thermoplastic membrane roof systems and their components. Manufacturer must provide approved uplift testing for induction welded roof systems.
 2. The manufacturer shall certify the scrim reinforced TPO membrane meets the physical properties specified.
 3. The contractor shall include a certification from the manufacturer, on the manufacturer's letterhead, that the proposed membrane, insulation and accessories will be covered in the warranty by the manufacturer of record.
- B. Installer Qualifications
1. Applicator: A company approved by Manufacturer, and specializing in single-ply roofing systems with at least twenty (20) installations of thermoplastic, scrim

reinforced membrane and 5 installations of heat inducted systems. The crew shall be composed of experienced installers skilled in this roof assembly. The contractor shall provide a superintendent /foreman on site full time that is aware of all project aspects and authorized to make on site decisions as required. The contractor will be required to properly staff the project at all times to meet all schedules and production rates.

C. Inspections

1. Manufacturer's Technical Representative: The manufacturer of the roofing system shall be required to attend the roof pre-installation conference to accept the conditions of the work and to perform interim inspections during installation. After the roof installation is complete, the manufacturer's technical representative, unrelated to the sales department of the manufacturer, shall inspect the work and inform (by written report) the design professional, contractor, Insurer/Insurer's consultant and the installer of defective/incomplete work to be remedied. Those areas indicated shall be corrected to the full satisfaction of the design professional, Insurer, and manufacturer. Copies of all inspection reports from the manufacturer shall be promptly submitted to the design professional and the roofing consultant. The manufacturer shall submit written acceptance of the project to the design professional in issuance of the weather-tightness warranty and that the system has been installed according to the Manufacturer's published specifications and details. Report describing inspections, corrective actions and certifying manufacturer's acceptance of installation shall be submitted to the Designer in accordance with Section 01400 - Quality Requirements.
2. Roofing Consultant: The owner reserves the right to retain, at the owner's expense, an independent consultant service to provide full-time inspection of the roofing system installation. The inspector shall have free access to inspect and test all items related to the project and the work area. The consultant/inspector will be responsible for accepting the installed roofing on behalf of the Insurer, and will also provide an 11 month inspection. The roofing contractor/general contractor will keep the consultant informed of all schedules, delays and inspections of the manufacturer (2 week notice).

D. Work shall conform to:

1. NRCA Roofing and Waterproofing Manual, Latest Editions.
2. SMACNA Architectural Sheet Metal Manual, 2003 Edition.
3. Underwriters Laboratories, Inc. (UL): Class A Fire Hazard Classification.
4. IBC International Building Code: related current code requirements.
5. ASCE-7-10 American Society of Civil Engineers-Wind Load Pressure Calculation Procedures and requirements.
6. Factory Mutual Engineering Corporation (FM): Roof assembly classification with a minimum of a wind uplift fastening pattern based of FM 1-75. Construction Bulletin 1-28 and 1-29, latest Edition, to include perimeter and corner enhancements.

1.6 SUBMITTALS

A. Provide in accordance with Conditions of Contract and Division 1 Specification Sections.

1. Shop Drawings: Submit shop drawings indicating;
 - a. Roof size, location, and type of penetrations as required for the following.
 - b. Roof assembly composition and attachment to deck.
 - c. Insulation assembly and cricket layout plan with cross sections and slope of tapered insulation.
 - d. Insulation fastening patterns that are required to conform to wind uplift design based on FM 1-75 insulation fastening requirements at the field, including enhancements at perimeter and corners.
 - e. Roof perimeter and corner areas as defined by FM Loss Prevention Data Sheet 1-28 with the width dimensioned for each roof section.
 - f. Complete set of details for all perimeters, drains, penetration and roof accessories flashings and terminations and manufacturer's published installation procedure details. All termination details must conform to project specifications and detail drawings provided.
 - g. All roof related sheet metal items submitted in conformance with the submittal requirements of Sheet Metal Flashing & Trim specification section, as well as SMACNA approved designs. Flashings at roof perimeters shall be certified ANSI / SPRI ES-1 details. (See also, current IBC Section 1504.5).
2. Product Data Submittals:
 - a. Provide technical product data sheets on ALL materials and accessories that are to be used in the roof assembly and associated with the roof including UL product listing and FM System listing for each type of insulation. The data sheets should be clearly marked where choices occur for type and thicknesses.
 - b. The Insulation manufacturer shall certify a warranty to the membrane manufacturer in order to meet the complete system warranty.
 - c. For fasteners that are to penetrate into, or through, pressure preservative treated lumber use stainless steel, hot dipped galvanized coated or provide certification from manufacturer that coating is compatible with preservative used for wood treatment.
 - d. Manufactures acknowledge letter showing the requirements of attachment, required products, acceptance of details and assemblies.
 - e. Provide a complete phone list and resumes of all superintendents and foremen that will be on the projects as out lined in spec section 013100, 1.4.

3. Fire Resistance: Provide roofing system, insulation, and component materials that have been tested for application and slopes indicated and are listed by UL for Class A external fire exposure over decks specified herein. Provide confirmation in submittal package.
4. Wind Uplift: Provide rigid insulation, roofing system, and component materials as specified and that have been tested as a complete system for application for the structural deck and slopes for this project. The system needs to be listed in Factory Mutual Research Approval Guide. Provide attachment to the deck that meets FM 1-75 membrane/insulation fastening requirements. Submit data that confirms this requirement and submit the required fastening patterns.
5. Copy of certificate documenting manufacturer's approval of installer as required in Paragraph 1.4-B-1.
6. Copies of test reports showing compliance with requirements as specified in Paragraph 2.02.
7. Samples:
 - a. 12 inch square minimum sample of roofing membrane including lap seam
 - b. Sample RhinoBond Plate and fastener provided by the membrane manufacturer.
8. Provide copy of manufacturers' printed installation instructions and current recommendations.
9. Provide manufacture's notice of approval for warranty, or other manufacturer's signed document which verifies that:
 - a. The roof system proposed for this project qualifies for their 20 year N.D.L. total system warranty and with the roof system composition listed.
 - b. The installed roof will meet Class A fire rating.
 - c. The roof system as installed will meet the specified performance requirements. A listing of the fastening patterns and attachment that meet tested FM 1-75 fastening requirements for the field, perimeter, ridge and corner areas for the project roof decks should be included
10. Provide copy of warranties required in Paragraph 1.6 for review and approval by design professional. Warranty shall include a minimum wind speed warranty of 75 mph.
11. Provide proposed overnight seal detail including product data sheets for each product.
12. Provide a complete phone list and resumes of all superintendents and foremen that will be on the projects as out lined in spec section 2.1, B. Turn in no later than at Pre-Roof Meeting

1.7 WARRANTY

- A. Manufacturer's Warranty: Provide roofing manufacturer's total system leak-tight 20-year labor and 20-year material "No Dollar Limit Warranty," including insulation and all components. The warranty shall contain no exclusion or limitation for improper installation, damage from water that ponds, or does not drain freely. Provide all details necessary to qualify for manufacturer's "No Dollar Limit Warranty" and the manufacturer will respond within 48 hours and repair, within five (5) business days, any leaks in the roofing assembly for the warranty period stated above at no cost to the owner, unless the leak is determined to be caused by others. The warranty shall cover wind speeds up to and including 75 mph.
- B. Roofer's Guarantee: Provide written guarantee from the Contractor stating that the Contractor will respond within 24 hours and repair within five (5) business days, any leaks in the roofing assembly for 2 years at no cost to the owner.

1.8 PRE INSTALLATION CONFERENCE

- A. Conduct a pre-installation conference prior to commencing work of this section at project site under provisions in Division 1 Section "Project Management and Coordination". Review methods and procedures related to roofing system including, but not limited to, the following:
 - 1. Meet with Owner, Designer, Insurer if applicable, testing and inspecting agency representative, Roofing Installer, Roofing System Manufacturer's representative, Deck Installer, and Installers whose work interfaces with or affects roofing including installers of roof accessories and roof-mounted equipment.
 - 2. Be prepared to discuss the total number of work days planned to totally complete the roof project including all associated metal work, and what your working schedule will be.
 - 3. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 - 4. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 5. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
 - 6. Review structural loading limitations of roof deck during and after roofing.
 - 7. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system or whose work will interface with the roof assembly as part of the building envelope.
 - 8. Review governing regulations and school safety requirements.
 - 9. Review temporary protection requirements for roofing system during and after installation.

10. If not already submitted, provide a complete phone list and resumes of all superintendents and foremen that will be on the projects as out lined in spec section 2.1, B

1.9 DELIVERY, STORAGE, HANDLING

- A. Deliver products to site in unopened containers showing brand names and instructions.
- B. Store and protect temperature sensitive products in 55° to 80°F environment prior to usage. Store flammable or toxic material according to label instruction. Store each product in weather protected environment, clear of ground and moisture.
- C. Protect insulation from direct exposure to sunlight and moisture. For polyisocyanurate insulation, follow the recommendations of PIMA and the manufacturer's requirements.
- D. Mark wet, damaged & defective materials and remove from site the same day

1.10 JOB SITE CONSIDERATIONS (CAUTIONS AND WARNINGS)

- A. Keep all adhesives, sealants and cleaning materials away from ALL ignition sources (i.e., torches, flames, fire, sparks, etc.).
- B. Consult container labels and Material Safety Data Sheets for specific safety instructions for all products used on the project.
- C. All bonding, splicing, and sealing surfaces must be free of dirt, moisture, and any other contaminants.
- D. When the outside temperature is below 40°F (4.44°C), certain combinations of temperature and humidity may cause condensation on the surface of the membrane Bonding Adhesive. If this condition occurs, do not mate the surfaces. When the ambient air-conditions no longer cause condensation, apply additional Bonding Adhesive and proceed.
- E. If Bonding Adhesive is used, temperature must be 40°F (4.44°C) and rising for the material to perform as designed.
- F. Do not use open flame sources (i.e., propane torches, etc.) to expedite drying of adhesives, sealants, etc. Allow to air dry only.
- G. Do not thin or modify any materials.
- H. Deliver materials to job site in their original containers as labeled by the manufacturer.
- I. Follow directions for protection of materials prior to and during installation. Do not use materials that have been damaged to the point that they will not perform as specified.
- J. Care should be used when installing fasteners to avoid possible conduits and other piping in and under the deck.
- K. Fumes from adhesive solvents may be drawn into the building during installation, through rooftop intakes. Refer to the Technical Information Sheet "Recommended Guidelines for Application of Roofing Materials to an Occupied Building" in the manufactures manual for

specific guidelines. Contractor is responsible for controlling all fumes and means and method of the installation

- L. Store the membrane in the original undisturbed plastic wrap in a cool shaded area and cover with light-colored, breathable tarpaulins, in a manner to protect it from damage. Membrane that has been exposed to the elements for approximately 12 hours or more must be prepared with (Splice Wash) prior to hot air welding.
- M. TPO is a reflective membrane. Adequate UV eye protection is necessary during installation.
- N. Do not use oil base or bituminous base roof cement with TPO Membrane.
- O. Contact Manufactures Technical Services for procedures when installing the membrane during temperatures less than 40°F (4.44°C).

PART 2 - PRODUCTS

2.1 GENERAL

- A. Roof System shall be a UL Class A rated system and attached to the deck in accordance with wind uplift designs based on FM I-75 fastening requirements including corner and perimeter enhancements for induction welded systems.
- B. At all times the job must be staffed with trained employees in the system specified. There must be a superintendent in charge of the project at all times. The superintendent must be onsite as required to make sure the installation is completed properly and for all meetings. There must be a trained foreman on each project full time overseeing all aspects of the installation.

2.2 MEMBRANE

- A. Induction Welded, 80 mil, polyester scrim reinforced TPO membrane.
- B. Approved Manufacturers:
 - 1. Firestone
 - 2. Carlisle
 - 3. Johns Manville
- C. Requests for approval shall be submitted a minimum of 10 days prior to bid, in order to give the Owner Adequate time to review the proposal. The request shall be a complete package as noted below. Requirements to obtain consideration for approval of product include: (submit on Manufacturers letterhead)
 - 1. Complete specification with details for Designer review, along with certification from Manufacturer of substitute membrane that proposed material and system is in compliance with all other requirements of this specification.
 - 2. Proof of experience as a manufacturer of the proposed membrane, with a minimum of five (5) years experience with thermoplastic membrane.
 - 3. Provide manufacturer certification that membrane contains no liquid plasticizers, and

must be high molecular weight TPO polymers.

4. Provide manufacturers listing of common chemicals that may affect the membrane or the roof system in general.
5. Verification of UL Class A and FM system rating with a membrane attachment and maximum sheet width, in order to minimize seams on the roof. Every roll of membrane shall be UL labeled.
6. Provide adequate background information to the owner, to demonstrate that manufacturer has the capability to service, and back the Warranty for the term herein specified.

2.3 ROOF MEMBRANE

- A. Membrane Sheet Material: Membrane shall be 80 mil nominal thickness, white TPO membrane polyester reinforced. There shall be a minimum of 20 mils of TPO membrane above the scrim and the weathering surface of the roof. The TPO sheet physical properties must be actual tested properties of the sheet, not typical or hypothetical values. Membrane must meet or exceed the physical properties of the current ASTM D-6878 for TPO roofing membranes.

2.4 RELATED MATERIALS

- A. Flashing: Baseflashings same membrane as Roofing, but 60 mil reinforced can be used. For field fabricated vent stacks, pipes and corners provide unreinforced 55mil minimum uncured white TPO.
- B. Bonding Adhesive: Standard solvent based bonding adhesive provided by Manufacturer to hold flashings in place. Do not apply in seam areas.
- C. 24 Gauge TPO Coated Metal: as detailed in the plans; otherwise, use specified galvanized metal or color finished metal as detailed. All scuppers must be 24 gauge TPO coated metal.
- D. Sealant: Provide to serve as water cut-off mastic, penetration pocket sealer, and to caulk TPO membrane edge to metal. Provide cut edge sealant.
- E. Primer: For preparing contaminated membrane for hot-air welding.
- F. Seam Caulk: Shall be provided for the purpose of sealing any non encapsulated edge of reinforced membrane.
- G. Overnight Seal: As provided by Manufacturer. All seals must be maintained every night.
- H. Sealants: Sealants not a part of the Roofing System shall be compatible with TPO materials and applied according to manufacturer's instructions. Acceptable sealants are one part polysulfide and one part urethane.
- I. Mechanical Fasteners: Manufacturer provided fasteners designed for use on Project roof deck based on requirements of induction welded TPO membrane assemblies. Where installation incorporates insulation within the system, provide fasteners with anti-blackout devices as required by each manufacturer.

- J. Polyurethane Insulation Foam Adhesive: One part or two part as recommended by the Manufacturer to adhere insulation in place and applied to meet wind uplift requirements.
- K. Foam Backer Rod: Provide acceptable foam backer rod materials for expansion joints or other building envelope interfaces.
- L. Nailers: No. 2 or better, treated if required by code.
- M. Seam Cleaner: Use a surface cleaner at dirty or contaminated membrane prior to heat weld.
- N. Termination Bar: As provided by manufacturer fastened 6" O.C. with caulking behind the compression point and on top of caulking tray.
- O. Pipe Boots & Corners: Provide 0.055 inches pre-molded unsupported TPO flashing at 1" to 6" diameter pipes and at inside and outside corners.
- P. Edge Metal Systems: As specified in Section 07 62 00 – Sheet Metal Flashing and Trim and/or as detailed in plans.
- Q. Counterflashings: As specified in Section 07 62 00 – Sheet Metal Flashing and Trim. Regardless of manufacturer's requirements or details, two piece counterflashings shall be installed.
- R. Where plastic drain strainers exist replace with new cast iron baskets
- S. Clean drains pipes and water test to insure that blockage doesn't exist and seal is watertight.
- T. Walk Pad: Provide heavy embossed tread pad by TPO manufacture. Recycled products will be provided where possible.
- U. T-Joint Covers shall be installed on all T- Joints.

2.5 ROOF INSULATION PRODUCTS

A. INSULATION

1. Description: Roof insulation consisting of a closed cell Polyisocyanurate foam core meeting ASTM Standard Specification
 - a. ASTM C1289-16, Type 2, Class 1: Insulation faced with glass fiber reinforced cellulosic felt facers on both major surfaces
2. Nominal board size is 48"x 48" for insulation adhesive application and 48"x 96" for mechanically attached application.
3. Provide a minimum of two layers of insulation. Minimum of 20 psi compressive strength, square edge
4. All R-Values must be based on the new LTTR ASTM C1289-13e1 standards.

B COVERBOARD

- 1.. Cover board shall be either of the following as approved by membrane manufacturer for total system warranty, induction weld criteria and roof system code requirements, see drawings.
 - a. 1/2" DensDeck Prime/SecureRock, or equal

C INSULATION ATTACHMENT

1. Mechanical Fasteners:
 - a. Attach insulation using Fasteners and Insulation Plates in accordance with the manufacturer's Induction Welded assembly to comply with the wind uplift design based on FM 1-75 as detailed in the specifications above. In a multi-layer insulation assembly, the type and thickness of the top layer of insulation determine fastening pattern. Insulation fasteners shall penetrate the top of the flutes and shall be sufficient to penetrate deck a minimum of 3/4" for steel and 1" for wood and concrete. Structural concrete decks must be pre-drilled with a 7/32" carbide drill bit to a depth 1/2" deeper than the fastener engagement. Roofing contractor is liable for replacing fasteners that extend beyond the bottom of the flutes.
 - b. Reference Standard: SAE 1022, Heat Treated.
 - c. Product/Producer: Heavy Duty (HD) fasteners.
 - d. Provide fasteners sufficient to produce FM I-75 uplift resistance attachment patterns to the deck.

D. JOB REQUIREMENTS

1. Crickets On All Roofs
 - a. Polyisocyanurate Crickets: Installed crickets must provide at least a 1/4" per foot reverse slope. Crickets drawn on drawings are shown for intent only. All crickets should be installed at a minimum 3 to 1 length to width ratio and increased as necessary to provide positive drainage.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION

- A. Install membrane and accessories in accordance with plans, specifications and manufacturer's specifications and current recommendations following the most stringent requirement of the three.
- B. Do not expose the building and materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during the same day
- C. Protect building surfaces against damage from roofing work.

3.02 DECK EXAMINATION AND PREPARATION

- A. Inspect roof decks for deficiencies and report to the Design Professional immediately any deficiencies. Do not proceed with installation of roof, until all deficiencies have been corrected. Start of roofing shall constitute acceptance of deck.
 - 1. Verify that deck is supported, secured and free of depressions.
 - 2. Verify that metal deck surfaces are dry and free of snow or ice.
 - 3. Verify that roof openings, curbs, pipes, sleeves, ducts & vents through roof are solidly set and wood nailers are in place
 - 4. On roofs to be recovered, remove and replace any wet roofing and insulation, and remove base flashings, penetration flashings, gravel surfacing, blisters and ridges.
 - 5. On roofs to be replaced, remove all roofing to the deck. Clean deck of all debris.

3.03 PHASED CONSTRUCTION & COMPLETION REQUIREMENTS

- A. Phased construction will not be permitted on this project.
- B. Once roofing operations are started, the roofing application, including all associated metal work, must be continuous and finalized with all punch lists completed in the number of work days calculated from the following overall production rates:
 - 1. 700 SF/Day (3,500 SF/40 hr Work Week) Completion Rate based on a 5 day 40 hour work week, or
 - 2. 875 SF/Day (3,500 SF/40 hr Work Week) Completion Rate based on a 4 day 40 hour work week.

Unless the Contractor's failure to complete the roof portion of the Work within this time limit is justified for reasons allowed under the Contract, the Contractor shall reimburse the Owner for all related expenses incurred by the Owner due to such failure. These expenses may include, but not be limited to, the additional costs to Owner for related roof consulting and observation services.

3.04 WOOD NAILER LOCATION AND INSTALLATION

- A. Install wood nailers at roof edges, metal flashings, gutters, and elsewhere as shown on Drawings and approved shop drawings or as required by system manufacturer Install wood nailers as follows:
 - 1. Nailers are to be installed as per ANSI / SPRI ES-1 compliance
 - 2. Treated Wood Fasteners: All fasteners used in wood that has been pressure treated with preservatives must be hot dipped galvanized coated, stainless steel or approved in writing by the fastener manufacturer for use in treated wood.
 - 3. Chemical treating wood nailer for fire resistance or other purposes may affect the performance of the TPO Membrane and accessories. Consult Manufacturer's Technical Services Department regarding compatibility.
 - 4. Discard units of material with defects that might impair quality of work and units that are too small to use in fabricating work with minimum joints or optimum joint arrangement.

4. The nailer height must match the total thickness of insulation. Where tapered insulation is used, the wood nailer must be tapered so that it will always be flush at the point of contact with the insulation (refer to Details). Set nailers to required levels and lines with members plumb and true.
5. Top of perimeter nailers shall be uniformly flush with the top of insulation.
6. Nailers shall be installed with 1/4" gap between ends of adjoining pieces.
7. Nailers shall be fastened in accordance with the following schedule:
 - a. Fasteners in 6" or wider (nominal) lumber shall be installed in two (2) rows, staggered one-third of nailer width. Listed spacings indicate distance between fasteners in adjacent rows.
 - b. Treated Wood Fasteners: All fasteners used in wood that has been pressure treated with preservatives must be hot dipped galvanized coated, stainless steel or approved in writing by the fastener manufacturer for use in treated wood.
 - c. Corner fastener spacing is 1/2 of the perimeter spacing (double the fasteners) and shall extend 8 Ft maximum from all outside building corners.
 - d. Where two or more nailers are installed, each nailer shall be fastened independently.
 - e. Over all deck types, the bottom nailer shall be fastened using the specified fasteners and 5/8" diameter washers. Countersink washers and fasteners level with top of wood using spade bit or similar method. Fasten subsequent nailers, where specified, using the specified screws without washers.
 - f. Nailer attachment shall meet a minimum uplift resistance of 200 lbs.
 - g. A Fastener shall be 4" in from both nailer ends.
 - h. Nailer Attachment Schedule (unless noted otherwise on the drawings)

<u>Attachment Substrate</u>	<u>Perimeter Fastener Spacing (Maximum)</u>
Structural Concrete	12" o.c.
CMU (fastener into solid material)	12" o.c.
Steel Deck	12" o.c.
Wood	12" o.c.

3.05 INSULATION INSTALLATION

- A. Install Insulation: Install only as much insulation as can be covered with roofing membrane and completed before the end of the day's work or before the onset of inclement weather.
- B. Stagger Insulation Joints: All joints are to be staggered. When installing multiple layers of insulation, all joints between layers should be staggered.
- C. Fit Insulation: Neatly fit insulation to all penetrations, projections, and nailers. Insulation should be loosely fitted, with gaps greater than 1/4" being filled with acceptable insulation. Under no circumstances should the membrane be left unsupported over a space greater than

1/4". Tapered or feathered insulation should be installed around roof drains so as to provide proper slope for drainage.

D. Cricket/Saddles:

1. Crickets on plans are shown for intent only. The contractor is responsible for installing the crickets with a sufficient length to width ratio to provide positive drainage to drains/scuppers. The maximum length to width (L:W) ratio for various roof slopes are:

SADDLES AND CRICKETS

Roof Slope	Saddle/Cricket Material Slope	Maximum L:W Ratio
1/8	1/4	3:1
1/4	1/2	3:1
3/8	3/4	3.5:1
1/2	1	4:1
3/4	1.5	4:1
1	2	4:1

Do not exceed the maximum ratios. The ratios can be decreased if needed to provide positive drainage.

2. If the crickets are overlaid with a layer of insulation, a row of fasteners should be applied along the cricket valley line to insure the overlay conforms to the cricket configuration. If the crickets are installed on top of all insulation, a tapered edge strip sized from the cricket edge height down to 0" shall be installed.

E. Insulation Attachment to Deck:

1. Attach insulation using Fasteners and Insulation Plates in accordance with the manufacturer's Induction Welded assembly to comply with the wind uplift design based on FM 1-75 as detailed in the specifications above. In a multi-layer insulation assembly, the type and thickness of the top layer of insulation determines the fastening pattern.
2. Fastener lengths shall be sufficient to penetrate into the deck a minimum of 3/4" for steel and 1" for wood and concrete. Structural concrete decks must be pre-drilled with a 7/32" carbide drill bit to a depth 1/2" deeper than the fastener engagement.
3. On exposed metal decks the insulation fasteners shall only penetrate into the deck top flange and shall not extend below the bottom of the flutes into the building interior. Roofing contractor is liable for replacing fasteners that extend beyond the bottom of the flutes
4. On exposed wood decks the fasteners must not penetrate through or split the exposed wood. Roofing contractor is liable for replacing fasteners and any damaged wood ceilings, including the wood finish, resulting from fasteners penetrating through the wood.

3.06 MEMBRANE INSTALLATION

- A. Starting at the low point of the roof, place the membrane panels without stretching over the acceptable substrate that is clean and free of debris. Position subsequent membrane sheets in the same manner, overlapping the ends of adjoining sheets a minimum of 3" and side laps a minimum of 6". Install panels to insure that laps shed water. Allow membrane to relax at least 30 minutes before attachment or splicing. In colder weather allow for longer relax time. Install membrane without wrinkles and without gaps or fish mouths in seams; bond and test seams and laps in accordance with membrane manufacturer's instructions.
- B. Where TPO Membrane has been cut to expose reinforcing membrane, TPO Cut Edge Sealant must be used to encapsulate exposed edge.
- C. Calibrate each induction welding tool in accordance with membrane roofing manufacturer's instructions to appropriate level for weather conditions. Run destructive weld tests before starting each day and after any significant change in the air temperature, and as required by manufacturer's instructions if requirements are greater.
- D. Weld membrane to attached Rhino Plates using induction welding tools as recommended by manufacturer, following specified pattern provided by manufacturer. All plates should be welded prior to moving onto a new section. All plates that have damage, asphalt, glues or other defects must be replaced prior to welding.
- E. On a daily basis follow manufacturer's direction for verifying that all induction welding are fully bonded to the membrane.
- F. For corners and perimeters follow enhancement patterns as specified for FM 1-75 uplift design requirements.
- G. Perimeter fastening at all parapets, curbs and ducts, is to form an air/water barrier by turning the field membrane perimeter up onto vertical walls, etc., and terminate with a metal termination bar (term bar) fastened 6" or 8" O.C., depending on how termination bar is pre-punched. Butyl sealant is to be applied behind membrane at termination bar to provide compression seal. Seal corners with manufacturer's appropriate sealant. Leave a 1/4" gap between ends of term bar, and do not bend a term bar around a corner.
- H. Secure the membrane at all locations where the membrane goes through an angle change of 1" in 12".
- I. All membrane fasteners are subject to the requirements in 3.05.E.2, 3 &4.

3.07 MEMBRANE LAP SPLICING

- A. Calibrate automatic welder in accordance with membrane roofing manufacturer's instructions to appropriate level for weather conditions. Run destructive weld tests before starting each

day, after any significant change in the air temperature, and as required by manufacturer's instructions if requirements are greater.

- B. Lap splice areas that have been contaminated, or unwrapped or exposed for 12 hrs or more, must be wiped down with a clean white cloth dampened with manufacturer's splice wash prior to heat welding and allow to completely dry.
- C. All field and flashing splices on the horizontal surface shall be completed using an automatic heat welder that has been designed for hot air welding of TPO membranes.
- D. Hand held welders are only to be used on vertical welds or where an automatic welder is not practical or cannot be used.
- E. Seams made with the automatic welder shall be a minimum of 1-1/2" wide. Seams made with hand welders shall be a minimum of 2" wide. Use 2" side silicone or silicone coated steel hand rollers to assure proper mating of surfaces as hand heat welding proceeds.
- F. Probe all completed welds daily using a slotted screwdriver, or a dulled cotter pin puller type tool, to verify seam integrity. Do not probe welds until they have had time to cool to ambient conditions. Any welds found to be insufficiently welded need to be repaired on a daily basis. Any seam voids, or insufficient welds, that are 2" or less in length are to be repaired with a patch.

3.08 FLASHING - PENETRATIONS

- A. General:
 - 1. Flash all penetrations passing through the membrane.
 - 2. The flashing seal must be made directly to the penetration.
 - 3. The penetration must be thoroughly cleaned prior to applying the flashing.
- B. Pipes, Round Supports, etc.
 - 1. Flash with Pre-Molded TPO Pipe Flashings where practical.
 - 2. Flash using TPO unsupported Flashing membrane to form a field fabricated flashing only when Pre-Molded Flashing is not practical.
 - 3. At top section of flashing apply Manufacturer's Water Block sealant between pipe and membrane and compress with a stainless steel clamp.
 - 4. Once flashing is installed, seal around top of flashing with Manufacturer's All Purpose sealant.
- C. Flexible Pipe/Conduit Penetrations:
 - 1. Provide a weather tight goose neck conduit for flexible pipe/conduit penetrations secured to the deck. Flash in accordance with Manufacturers Details.
- D. Pipe Clusters

1. Provide an insulated roof penetration housing vault by Roof Penetration Housing, LLC (www.roofpenetration housings.com, 1-800-994-0945), or equal. Each contractor trade (HVAC, Electrical, Plumbing, etc.) shall provide the appropriate exit seals for their specific level of responsibility. Install per manufacturer's requirements and provide their 20 year warranty and certification of ICC 2015 compliance to the owners.
2. Pitch pans are to be avoided. Prior approval from the Design Professional is required for each pitch pan use. If penetration pockets are approved, all piping must be thoroughly cleaned and a minimum clearance of 1" between the penetrations and all sides must be provided. Secure penetration pockets per Manufacturers recommendations. Fill penetration pockets with Pourable Sealer, so as to shed water.
3. Fill penetration pockets with Pourable Sealer, so as to shed water.

E. Flexible Piping Penetrations

1. An alternate to a Roof Penetration Housing Vault for flexible piping, is to provide a weather tight gooseneck with roof outlet angled downward at a minimum of 45° and secured to the deck. Outlet to be sealed with foam insulation and coated with elastomeric coating.
2. Flash in accordance with Drawings and Manufacturers Details.

F. Roof Drains

1. Cast iron drain parts and strainers are to be used
2. Provide a clean even finish on the mating surfaces between the clamping ring and the drain bowl.
3. Taper insulation around the drain to provide a smooth transition from the roof surface to the drain.
4. Place water stop sealant on top of drain bowl where the clamping ring seats below membrane.
5. Install the roof drain clamping ring and clamping bolts. Tighten the clamping bolts to achieve uniform compression.
6. All drains are to be water tested below the pipe connection to the bowl or if further testing of the drain system is noted in the drawings.

G. Scuppers

1. Provide TPO coated welded watertight scupper.
2. Set welded watertight scupper in Water Block Seal and secure to the structure.
3. Flash in accordance with Manufacturer's and Plan details.

H. Expansion Joints

1. Install as shown on roof drawings in accordance with Manufacturers details.

3.09 FLASHING - WALLS, PARAPETS, MECHANICAL EQUIPMENT CURBS, SKYLIGHTS, etc.

- A. General: Using the longest pieces practical, flash all walls, parapets, curbs, etc., a minimum of 8" high per Manufacturers Details. When special situation flashings will not achieve a

minimum 8" finished flashing height, contact manufacturer for recommended details and approvals and notify specifier/owner of conditions.

- B. Flashing Substrates: All flashing substrates are to consist of, or be overlaid with, 5/8" minimum CDX plywood.
- C. Apply TPO Bonding Adhesive at about the same time to both the membrane flashing and the surface to which it is being bonded to allow approximately the same drying time. Apply Bonding Adhesive by rolling the adhesive on to the mating surfaces evenly, avoiding globs or puddles.
- D. Roll the flashing into the adhesive evenly and carefully to minimize wrinkles.
- E. To ensure proper contact, compress the flashing to the substrate with a stiff push broom.
- F. Provide membrane flashing termination directly to the vertical substrate as shown in Plan Details. At a minimum:
 - 1. Apply water block sealant behind membrane in top area,
 - 2. Attach termination bar 6" or 8" O.C., depending on how termination bar is pre-punched, leaving a 1/4" gap between joints of termination bar. Fasten no more than 1" from termination bar ends.
 - 3. Do not bend termination bar around corners.
 - 4. Cutoff excess TPO flashing above termination bar.
 - 5. Apply manufacturer's all-purpose sealant in caulking receiver at top of termination bar, tooling the sealant to facilitate water runoff.
 - 6. Install 2-piece counterflashing with reglet/receiver set in water block sealant against the wall, fastened 12" O.C. and for surface mounted type, apply manufacturer's all-purpose sealant in the caulking receiver and tool to facilitate water runoff.
- G. Install TPO T-Joint covers at all field and flashing splice T-joint intersections.
- H. Install intermediate flashing attachment for walls greater than 24" at 24" increments.

3.10 FLASHING - ROOF EDGE METALS

- A. Flash all roof edges using materials as outlined in specifications and Plan Details. All roof edge attachment to meet ANSI/SPRI ES-I requirements.
- B. Use manufacturers coated TPO metal for drip edge, scuppers and similar terminations as shown in plan details. Exposed metal color to be selected by Architect.
- C. Field membrane at a minimum is to extend over nailer and down outside face at least 3/4" past bottom of wood nailer.

3.11 ROOF WALKWAYS

- A. Walkways shall be the Roofing Manufacturer's TPO Walkway material.
- B. Walkways shall be installed in a neat, orderly fashion where indicated on roof plan or in

specifications. Chalk line walkway location on roof membrane, and position walkway in place using a chalk line as a guide.

- C. Install walkway with sufficient gaps so as not to impede drainage. Do not cover field seams with walkways leaving enough space to properly repair the field seam if needed. If there is a situation where the seams are located in an area that needs to be covered with the walk pad, do the following:
 - a. Probe and repair the seam as needed.
 - b. Clean and weld a 6" membrane strip over the seam
 - c. Probe and repair the 6" strip welds as needed.
 - d. Apply edge sealant as needed.
 - e. Install the walk pad over the reinforced seam as needed.
- D. Heat weld the perimeters of the walkway material to the TPO membrane per Manufacturers requirements. Place two rows of walk pads 36" wide minimum along three sides of working side of HVAC units and other serviced equipment. Place walk pad 36" wide minimum along access side(s) of all roof hatches, roof ladders, and other roof access points, and along pathways indicated in the drawings.

3.10 FIELD QUALITY CONTROL

- A. Perform a water test of all roof drains once the roof is complete. The test, shall be coordinated with the Owner and conducted by the Contractor in the presence of Design Professional, Owner's Roofing Observer and Owner's Representative.
- B. The water test shall include the following procedure:
 - a. Contractor shall provide and/or arrange for necessary equipment, supplies, water, etc. as needed to perform this test.
 - b. First, the drain piping to be tested for leaks
 - c. Then the membrane seal to drain bowl tested with water brought up 2" above immediate roof level.
 - d. All crickets are to be tested for proper drainage and holding of water in cricket valley and surrounding membrane field.

3.12 CLEAN-UP

- A. Clean all contaminants from building and surrounding areas.
- B. Remove bituminous markings from finished surfaces.
- C. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and conform to their documented instructions.
- D. Remove trash, debris, equipment from project site and surrounding areas.

- E. Repair or replace damaged building components or surrounding areas to the satisfaction of the building owner.
- F. Chemical spills, including bonding adhesive and membrane cleaner, should be cleaned immediately. Areas contaminated by chemicals should be inspected for permanent damage and may require removal and replacement, at no additional cost to the Owner.

END OF SECTION

SECTION 07 6113.02 – STANDING SEAM SHEET METAL ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions, general project requirements and Division 01 Specification Sections, apply to this Section.
- B. Documents specifically related to this section include:
 - 1. Section 01 3100 – Project Management and Coordination: Coordination of roofing work with Owner; roofing sequence inclusion in Project Schedule.
 - 2. Section 01 4100 – Quality Requirements: Roofing observation services and reports; Contractor’s responsibilities.
 - 3. Section 07 2100 – Thermal Insulation
 - 4. Section 07 5423.01 – Adhered TPO Thermoplastic Membrane Roofing
 - 5. Section 07 6200 – Flashing and Sheet Metal
 - 6. Section 07 7100 – Roofing Specialties
 - 7. Section 07 7200 – Roofing Accessories
- C. Not Used.

1.2 SCOPE OF WORK

- A. Furnish and install a weather and watertight standing seam sheet metal roof complete, in-place, per the Contract Documents. IMETCO Series 300 is the basis of performance, material, and detail of the Standing Seam sheet metal roof in this specification.
- B. The latest Manufacturer specifications and installation techniques are to be followed. When the Contract Documents and Manufacturer’s requirements are in variance with each other, the most stringent requirements of the two shall apply at no additional cost to Owner or resulting change in Contract.

1.3 CODE COMPLIANCE

- A. The completed roof system shall meet the following requirements:
 - 1. Building Code: IBC 2015
 - 2. Energy Code: IECC 2018
 - 3. External Fire Rating: UL Class A external fire rating.

- A. The completed roof system shall meet the following design wind load pressures calculated in accordance with the applicable building code:

See *Standing Seam Uplift Calculations* for this Project, attached to this specification section marked EXHIBIT A.

1.4 QUALIFICATIONS

A. Manufacturer Qualifications

- 1. The Manufacturer of the roofing system shall have not less than five (5) years of experience in the production of the specified system.

B. Installer Qualifications

- 1. The installer of the roofing shall have been engaged in the business of installing the specified roofing system for not less than five (5) years and shall be certified by the roofing system Manufacturer in the layout and application of this system. The installer shall have successfully installed the specified system as follows:
 - a. At least once, and;
 - b. At least five (5) years prior to Bid on this Project.
- 2. The crew shall be composed of experienced and skilled workers in this work.

1.5 QUALITY ASSURANCE

- A. Standards: Comply with latest edition of standards specified in this section and as referenced below:

- 1. The *NRCA Roofing and Waterproofing Manual* – National Roofing Contractors Association.
- 2. Roofing Manufacturer’s current published specifications, application instructions, and technical bulletins.
- 3. *Annual Book of ASTM Standards*, Latest Revision – ASTM International.

- B. Qualifications of Installers: Use adequate number of skilled workers who are thoroughly trained and experienced in the necessary crafts, and who are completely familiar with the specified requirements and methods needed for proper performance of the work in this section. In acceptance or rejection of the work, the Owner will make no allowance for lack of skill on the part of the workers.

- C. Roofing Inspections: Make all required notifications and secure all required inspections by the Manufacturer of the approved materials to facilitate issuance of the specified roof warranty.

- D. Roofing Consultant and Observer: The Owner shall provide the services of a Roofing Consultant Roofing Observer for the purposes of quality assurance in the design and

installation of the roofing system. See Subparagraph 1.1-B and other portions of this section for related Contractor's requirements.

- E. U.L. Listing: Provide materials bearing Underwriters Laboratories (U.L.) marking on bundle, package, or container, indicating that materials have been produced under U.L.'s classification and follow-up service.
- F. The Roofing Contractor shall not subcontract the installation of the roof system covered under this specification to an individual or a firm that is not a full-time employee of the Roofing Contractor's company.

1.6 REFERENCES

A. References: Materials used in this section shall be listed in the latest edition of the following:

- 1. *Roofing materials and Systems Directory and Fire Resistance Directory* – Underwriters Laboratories Inc.

1.7 SUBMITTALS

A. General: Comply with the provisions of the General Conditions of the Contract and Division 01 specification sections. Submittal schedule shall allow ample time for processing and approval prior to Pre-Roofing Coordination Meeting and start of roof system installation work.

B. Product Data:

- 1. Most recent copy of Manufacturer's literature applicable to products and specifications to be used.
- 2. Complete material list of all items proposed to be furnished and installed under this section.
- 3. Letter from Manufacturer stating that the roofing contractor is approved for installation of the specified roofing system.
- 4. Manufacturer's recommended methods of installation.
 - a. When approved by the Design Professional, the Manufacturer's recommended methods of installation, unless superseded by more stringent requirements in the Contract Documents, will become the basis for inspecting, and acceptance or rejection of the actual installation procedures used in this Work.

C. Detail showing the proposed temporary water cutoff detail.

D. Fire Resistance Information: Provide documentation that roofing system, insulation, and component materials that have been tested for application and slopes indicated and are listed by Underwriters Laboratories, Inc. (UL) for Class A external fire exposure over deck specified herein.

E. Wind Uplift Information: Provide documentation that mechanically fastened roofing system, and component materials suitable for the structural deck, and that have been tested as a complete system for application and slopes indicated. Provide information on fastening for uplift resistance to meet the applicable Building Code.

F. Sheet metal and flashing shop drawings as required by Section 07 6200.

1.8 QUALITY ASSURANCE BY ROOF SYSTEM MANUFACTURER

- A. Membrane Manufacturer's technical representative, who shall be a full-time employee of the membrane Manufacturer's technical service, shall provide on-site training and quality assurance in conjunction with beginning of membrane installation. The Manufacturer's technical representative shall then visit the site to provide quality assurance and follow-up training a minimum of every two (2) weeks thereafter.
- B. During each visit, the Manufacturer's technical representative shall check all work installed since the last visit, mark all defects for repair, and provide a written site visitation report listing any deficient work requiring correction by the Contractor. All reports and other correspondence associated with the site visit shall be provided to the Contractor, Owner's Roofing Consultant and Design Professional within three (3) business days of the visit.
- C. The Manufacturer's technical representative shall coordinate all site visits with the Contractor, Owner's Roofing Consultant and Design Professional a minimum of three (3) business days in-advance.
- D. After the roof installation is Substantially Complete, the Manufacturer shall inspect the work and inform (by written report) the Design Professional, Contractor, Owner's Roofing Consultant and the Installer of defective/incomplete work to be remedied. Those areas indicated shall be corrected to the full satisfaction of the Design Professional, Owner, and Manufacturer. The Manufacturer shall submit written acceptance of the project to the Design Professional prior to Final Completion for issuance of the weathertightness warranty.

1.9 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to job site in their original unopened containers. Package labels shall indicate material name, production date, and/or product code. Slit Manufacturer-supplied plastic and cover with weatherproof tarps that are securely anchored so as to resist blow off.
- B. Store materials in dry, raised, protected areas in an upright position. Control temperature of storage areas in accordance with Manufacturer's instructions. Protect materials from exposed to the elements. Do not exceed allowable live load of storage area.
- C. Use all necessary means to protect the materials in this section before, during, and after installation, and to protect the work and materials of all other trades.
- D. In the event of damage to roofing and related work or building components, immediately make all necessary repairs and replacements subject to the approval of and at no additional cost to the Owner.
- E. Wet, damaged, or defective materials which are intended for incorporation into the new roofing system shall be marked to indicate rejection, and removed from the site the same day as discovered.

1.10 SCHEDULING

- A. Work is to be performed on a daily basis with each section completed before progressing to the next day's work, unless specifically directed otherwise by the Design Professional.
- B. Substantial Completion of roofing work will be defined as the contractually required and weathertight installation of all specified roof preparation, insulation, field membrane, flashings, counterflashings, sheet metal, fasteners and caulking.
- C. All flashings shall be installed concurrently with the roofing membrane as the job progresses. No temporary flashings shall be allowed without the prior written approval of the Design Professional. If any water is allowed to enter under the newly completed roofing due to incomplete flashings, seams and or night seals, the affected area shall be removed and replaced at the Contractor's expense.
- D. Once roofing is started, the roofing application must be Substantially Complete within the time period required by the Contract. All punch list items must be complete prior to Final Completion.

1.11 WARRANTY

- A. The Roofing Contractor shall warrant all materials and workmanship for a period of two years from the date of acceptance of the completed work by the Owner. The Roofing Contractor shall make good any defects in materials or workmanship that may develop during the two-year period by repairing or replacing such defects at his own expense without cost to the Owner. Roofing Contractor shall use the form entitled "Roofing Contractor's Warranty" provided in this section.
- B. The Contractor shall make all necessary notices for warranty purpose to the primary roofing Manufacturer, to secure timely inspections and issuance of the warranty.
- C. Upon Final Completion and prior to final payment, Contractor shall pay all required fees, secure all required inspections, and complete all items necessary to secure and deliver to the Design Professional the following items:
 - 1. Copies of all Manufacturer's punch lists and documentation of completion.
 - 2. Primary Roofing Manufacturer's 20-year no dollar limit (NDL) labor and material, total systems warranty on the form provided in this section. The total system warranty shall include the following:
 - i. Roof panels
 - ii. Roof trim
 - iii. Roof underlayment
 - iv. Roof system fasteners, termination bars, clips, and other miscellaneous accessories supplied by the roofing Manufacturer

- D. Primary Roofing Manufacturer's Warranty shall cover building code required design wind speed.
- E. Primary Roofing Manufacturer's warranty shall cover defects in materials and workmanship and shall become effective at the completion of the work. This warranty shall not include any buy-out clauses and shall not be prorated.
- F. All warranties shall contain written provision(s) stating that they will be fully transferable at any time during the specified warranty period.
- G. Submit all items to the Design Professional within ten days of receipt from the Manufacturer or within ten days of the final inspection.

1.12 ROOFING DATA FORMS

- A. Roofing data forms shall be submitted at Project Closeout by Contractor. See Sections 01 7800 and 01 7801 for requirements.

PART 2 – PRODUCTS

2.1 GENERAL

- A. All materials used on this project shall be compatible with the existing conditions and with each other.
- B. No product shall contain any asbestos or asbestos-related products.

2.2 ACCEPTABLE MANUFACTURERS

- A. Basis of Design: IMETCO Series 300 standing seam panel system; 24 gauge 16" width panel with center step-up.
 - a. Design and performance criteria.
 - i. Thermal Expansion and Contraction.
 - 1. Completed metal roofing and flashing system shall be capable of withstanding expansion and contraction of components caused by changes in temperature without buckling or reducing performance ability.
 - 2. The design temperature differential shall be not less than 220 degrees Fahrenheit.
 - 3. The interface between panel and clip shall provide for unlimited thermal movement in each direction along the longitudinal direction.
 - b. Uniform Wind Uplift Load Capacity.
 - i. Installed roof system shall withstand negative wind uplift pressures complying with the following criteria.
 - 1. Design Code: ASCE 7, Method 2 for Components and Cladding.

- 2. Safety Factor: As determined in accordance with AISI S100 section D6.2.1, but in no instance shall the safety factor be taken to be less than 1.67 for any roof or wall zone. The provisions of Section D6.2.1a of Appendix A shall NOT be applicable for this project.
- ii. The ultimate capacity of the panel system shall be determined based on performance testing in accordance with ASTM E1592. The allowable load carrying capacity shall be calculated in accordance with AISI S100 section D6.2.1, except the provisions of Section D6.2.1a of Appendix A shall NOT be applicable for this project.
- c. Uniform Positive Load Capacity
 - i. Uniform positive load capacity shall be determined in accordance with AISI S100.
 - ii. The installed roof system shall be capable of resisting each of the following positive uniform roof loads: Roof Live Load of 20 psf; Roof Live Load (Snow) of 20 psf.
 - iii. Installed roof system shall carry positive uniform design loads with a maximum system deflection of L/180 as measured at the rib (web) of the panel.
- d. Wind Uplift Classification: The panel system shall be listed as a Class 90 windstorm rated system, as determined by UL 580.
- e. Fire Resistance Classification: The panel system shall be listed as a Class A Roof Covering, as determined by UL 790.
- f. Air infiltration: The panel system shall be tested in accordance with ASTM E1680, and meet or exceed the following performance requirements:

<u>Pressure</u>	<u>Area Leakage Rate</u>
1.57 PSF	0.0030 cfm/sq.ft.
6.24 PSF	0.0045 cfm/sq.ft.
20.0 PSF	0.0060 cfm/sq.ft.

G. Static air pressure water infiltration: The panel system shall be tested in accordance with ASTM E1646, and meet or exceed the following performance requirements:

<u>Pressure</u>	<u>Result</u>
6.2 Gal/Hr per S.F. and Static Air Pressure of 20.0 psf for 15 minutes	No Leakage

- g. Static water pressure head water infiltration.
 - i. The panel system shall be tested in accordance with ASTM E2140, and pass with no leakage. The test specimen must include a panel end lap condition and successfully withstand being submerged under 6” of water for 6 hours.
 - ii. The panel system shall be tested in accordance with the FBC TAS 114 Appendix G, and pass with no leakage. The test specimen must successfully withstand being submerged under 6” of water for 168 hours.
- h. Dynamic pressure water penetration.

- i. The panel system shall be tested in accordance with AAMA 501.1, and pass with no water penetration, other than condensation, when exposed to 8" per hour of dynamic rain and 70 mph wind velocities for not less than five (5) minutes duration.
 - ii. The panel system shall be tested in accordance with FBC TAS 100, and pass with no water penetration, other than condensation, when exposed to 8.8" per hour of dynamic rain and 110 mph wind velocities for not less than five (5) minutes duration.
 - i. Missile Impact Test and Cyclic Wind Pressure Test.
 - i. The panel system shall be tested in accordance with ASTM E1886. The tested system shall be of identical profile and material type as the specified panel for this project; thicker gauge and/or narrow width panels than those tested will be acceptable. The anchor clip spacing for this project shall be based on E1592 requirements, but shall not exceed that of the E1886 test report.
 - ii. The panel system shall be tested in accordance with FBC Test Protocols TAS 201 and TAS 203. The tested system shall be of identical profile and material type as the specified panel for this project; thicker gauge and/or narrow width panels than those tested will be acceptable. The anchor clip spacing for this project shall be based on E1592 requirements, but shall not exceed that of the TAS 201 test reports.
- B. Other manufacturers: subject to compliance with requirements, manufacturers offering products that may be incorporated into the work include the following:
 - 1. CENTRIA - SRS-3 Roof Panel
 - 2. DMI (Dimensional Metals, Inc.) - Tee-Lock TL25 roof panel
 - 3. ENGLERT - Series 3000

2.3 MATERIALS

- A. Hot-Rolled Structural Shapes: ASTM A 36 or A 529.
- B. Tubing or Pipe: ASTM A 500, Grade B; ASTM A 501; or ASTM A 53.
- C. Members Fabricated from Plate or Bar Stock: 50,000 psi minimum yield strength; ASTM A 529, A 570, A 572, or A 607.
- D. Members Fabricated by Cold Forming: ASTM A 607 or A 570, Grade 50.
- E. Galvanized Steel Sheet: ASTM A 446 with G90 coating; "Class" to suit building Manufacturer's standards.

2.4 STRUCTURAL FRAMING COMPONENTS

- A. Secondary Framing: Purlins, eaves struts, and end wall beams, minimum 16-gauge roll formed sections. Shop painted or G-90 galvanized.
- B. Shop Painting: Clean surfaces to be primed of loose mill scale, rust, dirt, oil, grease, and other matter precluding paint bond. Follow procedures of SSPC-SP3 for power tool cleaning, SSPC-SP7 for brush-off blast cleaning, and SSPC-SP1 for solvent cleaning.

- C. Galvanized Prime: After phosphoric acid pretreatment, prime galvanized members with zinc oxide primer (FS TT-P641).

2.5 THERMAL INSULATION

A. Polyisocyanurate Foam Roof Insulation

1. Insulation shall be a closed-cell, polyisocyanurate foam core with factory-laminated facers conforming to ASTM specification C 1289-01, Type II, Class 1. Foam core shall have a rated flame spread of 75 or less according to ASTM E 84. Insulation shall have minimum compressive strength of 20 psi (Grade 2) according to ASTM C 1289-01. Insulation shall be supplied in 4' x 8' boards.
2. Cover board roof decking: Non-structural, moisture resistant 4'x8' x ½" gypsum panel. Gypsum panel shall conform to ASTM C 1177 or ASTM C 1278.

2.6 UNDERLAYMENT

A. Underlayment Materials

- A. Self-Adhering with reinforcing scrim, High-Temperature Sheet: 50-mils- (1.3-mm-) thick minimum, consisting of slip-resisting top surface laminated to SBS-modified asphalt adhesive, with release-paper backing; cold applied.
 1. Thermal Stability: Stable after testing at 250 deg F (121 deg C); ASTM D 1970.
 2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F (29 deg C); ASTM D 1970.
 3. Seams shall be lapped in accordance with manufacturer's recommendations.
 4. Underlayment shall be approved for 90 days (minimum) of exposure to UV and weather penetrations.
 5. Products:
 - i. Basis of Design: Aqua Block 50 by IMETCO of Norcross, GA.
 - ii. Subject to compliance with requirements, products of equal performance may be used based on the architect's review of submittals per section 01 6300 "product substitution procedures."

2.7 BEARING PLATES

- A. Minimum 4" x 4" x 20 gauge galvanized steel plates specifically designed for the attachment of the metal roof system.

2.8 ROOFING

- A. Note: "Basis of Design" requirements in paragraph 2.2.A. govern. General: Provide roofing roll formed to profile indicated and specified. Provide flashings, closures, fillers, metal expansion joints, ridge covers, roof panel mounting clips, gable and eave trim, gutters, and other sheet metal accessories factory formed and finished. Material and finish shall be as specified.

1. Allowances for Thermal Expansion: Metal roof system shall be designed, fabricated, and installed to allow relative movement between roof panels and attachment points, gables and ridges, due to thermal expansion and contraction, without causing damage to the system or permanent deformation to any of the system components. Roof panel end laps shall allow panels to expand and contract without damage to end lap seams. Roof panel end laps must be staggered to insure a continuous unbroken panel through each seam.
- B. Roof Panels: 24-gauge x 16" width, roll formed, Galvalume (aluminum-zinc alloy coated steel) sheet coated on both sides with a layer of aluminum-zinc alloy by continuous hot dip method (approximately 55% aluminum, 45% zinc). Triple spot minimum 0.55 oz. per square foot as determined by ASTM A 792. Length of panels shall be continuous panels from ridge/peak to eave except where required to break at curbs. Panels shall have two major corrugations nominally 2" high not including seam, 16" o.c., and minor corrugations between and parallel to major corrugations.
- C. Prefinished Panels: Clean galvanized steel with an alkaline compound, then treat with a zinc phosphate conversion coating and seal with a chromic acid rinse. Apply to exterior surfaces of pretreated steel a 90% fluoropolymer coating (Kynar 500/Hylar 5000) system supplied to provide a total dry film thickness of .09 mils minimum. Color is IMETCO Platinum Silver, custom premium.
- D. Additional Components:
1. Seam 2-3/8" (60 mm) minimum height for added strength for negative pressures and must have symmetrical design. Integral, asymmetrical seams are not acceptable.
 2. Site Formed Panels: only the manufacturer's roll forming shall be allowed.
 3. Concealed Standard Anchor Clips: Clips must be 16 gauge (1.4 mm) galvanized steel ONE (1) piece clip with projecting legs for additional panel alignment and provision for unlimited thermal movement in each direction along the longitudinal dimension.
 - i. Two-piece clips are NOT acceptable.
 - ii. Clip design must isolate sealant in panel cap from clip to insure that no sealant damage occurs from the clip during expansion and contraction.
 - iii. Clip must maintain a clearance of a minimum of 3/8" (9.5 mm) between panel and substrate for proper ventilation to help prevent condensation on underside of panel and eliminate the contact of panel fastener head to panel.
 4. Seam cap: Snap-on cap shall be a minimum of 1-inch- (25-mm-) wide "T" shaped of continuous length up to 45 feet (11.4 m) according to job conditions and field seamed by means of manufacturer's standard seaming machine.
 - i. Cap shall be designed to receive two (2) beads of hot applied, high viscosity, pressure sensitive adhesive with high heat resistance during manufacturing which will not come in contact with the anchor clip.
 - ii. In all cases, seam caps shall be factory formed to insure quality and precision in the process of sealant application.
 5. Standing Seam Panel Width: 16" (nominal).

6. Stiffening ribs: Located in flat of panel to minimize oil canning and telegraphing of structural members.
 7. Replaceability: Panels shall be of a symmetrical design with mechanically seamed cap configuration such that individual panels may be removable for replacement without removing adjacent panels and installation may proceed in both directions simultaneously.
 8. Panel ends shall be folded up 90 degrees at ridge, headwall, and hip conditions, where applicable. No metal shall be cut or otherwise perforated at the folded end.
- E. Sheet Panel Fasteners: Manufacturer's standard system of self-tapping screws, bolts, and nuts; self-locking rivets; self-locking bolts; end-welded studs; and other suitable fasteners designed to withstand design loads. Self-drilling fasteners are not acceptable.
1. Provide metal-backed neoprene/EPDM washers under heads of fasteners bearing on weather side of panels.
 2. Use stainless steel fasteners for exterior application and galvanized or cadmium-plated fasteners for interior application. Lock rivets where required shall be aluminum or stainless steel. Watertight rivets are to be used when penetrating through metal to substrate.
 3. Locate and space fasteners for true vertical and horizontal alignment. Use proper type fastening tools to obtain controlled, uniform compression for positive seal without rupture of neoprene washer.
 4. All exposed fasteners shall be color matched to match the panels.
- F. Flexible Closure Strips: Closed-cell, expanded cellular rubber, self-extinguishing, cut or pre-molded to match corrugation configuration of roofing and siding sheets. Provide where indicated and necessary to ensure weathertight construction.
- G. Sealing Tape: 99% solids, pressure sensitive grey polyisobutylene compound tape with release paper backing. Not less than 1/2" wide and 1/8" thick, non-sag, nontoxic, non-staining, and permanently elastic.
- H. Joint Sealant: One part elastomeric; polyurethane or polysulfide as recommended by building Manufacturer. Color to match roof panels.
- I. Manufactured Pipe Boot: Pipe flashing boot shall be one-piece construction of EPDM with flexible metal reinforcing ring bonded to flange on base of boot. Size of boot shall be appropriate for size of penetrations where the operating temperature of the penetration is between -25° F to 250° F.
- J. Equipment Mounting Curb: Shall be sized to fit equipment, welded watertight construction that is integral with panel, with water diverter or cricket on up-slope side of curb. Curb shall be designed to support load of equipment. Provide structural support for curb to transfer load to building's structural system. Profile of curb panel shall match that of specified metal panel roof system. Finish of curb shall match roof panels. Curb shall be manufactured by panel Manufacturer or supplier approved by panel Manufacturer.

2.9 OTHER MATERIALS

- A. All other materials not specifically described but required for a complete and proper installation of the work in this section shall be as selected by the Contractor, approved by the Manufacturer, and subject to the approval of the Owner.
- B. Wood Nailer – Division 06

PART 3 - EXECUTION

3.1 INSPECTION

- A. The Contractor shall be responsible for verifying existence of suitable substrate to accept the roofing system.
- B. Installer of roofing system shall examine substrate and conditions under which roofing work is to be performed and shall notify the Design Professional and Owner's Representative immediately of unsatisfactory conditions. Do not proceed with roofing work until unsatisfactory conditions have been corrected in a manner acceptable to Design Professional, installer and Manufacturer.
- C. Pre-roofing coordination meeting: Before roofing work may begin, the Design Professional shall conduct a pre-roofing coordination meeting with mandatory attendance required for the Owner's Representative, Owner's Roofing Consultant, primary roofing Manufacturer's technical representative, General Contractor, the Roofing Contractor, roofing foreman, and all other subcontractors who have any components of their work on or penetrating the roof. The participants shall:
 - 1. As much as is possible by visual inspection and by the cutting of core samples, inspect surfaces and site conditions required to be ready to receive work. Contractor shall verify acceptability of substrate for application of new roofing system before commencement of installation.
 - 2. Examine roof openings, curbs, pipes, sleeves, ducts, and vents through roof, cant strips, wood nailing strips and reglets in place. Observe if curbs and penetrations have been laid out and installed with adequate vertical and horizontal clearance as required by the Manufacturer to provide the specified warranty.
 - 3. Observe if the condition of surface to receive roof insulation is firm, clean, smooth, and dry.
 - 4. Review the Contractor's schedule for roofing work so that all parties can coordinate essential tasks within the time restraints and as required by the roofing production rates of the contract.
 - 5. Review the responsibilities of all parties in regard to communication and coordination during the roofing portion of the Work, especially in that which pertains to the involvement of the Owner's Roofing Consultant and Observer. See Section 00 7200 - General Conditions of the Contract and Division 01.
 - 6. Review status of all submittals necessary to be approved prior to the start of the roofing work.

7. Review plans for roofing equipment and materials staging and roofing schedule in coordination with school schedule and traffic patterns.

3.2 DESCRIPTION

A. Preparation and Surface Conditions

1. Before roof application is started, remove trash, debris, grease, oil, water, moisture, and contaminants that may affect bond of bitumen to substrate.
2. Prepare all surfaces according to applicable specification sections.
3. Protect adjacent areas from damage with tarps or other durable materials.
4. Surfaces scheduled to receive roofing are to be free of any standing water, frost, snow, or loose debris.
5. Substrate is to be smooth, properly sloped, free of sharp projections, and free of obvious depressions.
6. All roof openings, curbs, pipes, sleeves, ducts, and vents through roof shall be solidly set, and cant strips, wood nailing strips and reglets in place before roofing work begins. Verify that all nailers, curbs and penetrations have been laid out and securely installed with adequate vertical and horizontal clearance as required by the Manufacturer to provide the specified warranty.
7. Do not start roof application until defects have been corrected.

B. Installation – General

1. Perform all related work specified elsewhere necessary for the installation of the specified panel system.
2. Ensure that fasteners do not penetrate conduit or other miscellaneous items located on the underside of the roof deck.
3. Do not apply roofing materials when water in any form (i.e. rain, dew, ice, frost, snow, etc.) is present.
4. Do not apply roofing during inclement weather or when ambient conditions will not allow proper application. Consult Manufacturer's technical specifications on cold weather application.
5. Phased roofing system installation shall not be permitted.

3.3 WOOD NAILER INSTALLATION

- A. Nailers are to be installed as per detail drawings.
- B. Discard units of material with defects that might impair quality of work and units that are too small to use in fabricating work with minimum joints or optimum joint arrangement.

- C. Set nailers to required levels and lines with members plumb and true.
- D. Top of perimeter nailers shall be uniformly flush with the top of insulation.
- E. Nailers shall be installed with 1/4" gap between ends of adjoining pieces.
- F. Nailers shall be fastened in accordance with the following schedule:
 1. Fasteners in 6" or wider (nominal) lumber shall be installed in two (2) rows, staggered one-third of nailer width. Listed spacings indicate distance between fasteners in adjacent rows.
 2. Two (2) fasteners shall be installed within 3" of each nailer end.
 3. Corner fastener spacing shall extend 8' maximum from all outside building corners.
 4. Where two or more nailers are installed, each nailer shall be fastened independently.
 5. Over all deck types, the bottom nailer shall be fastened using the specified fasteners and 5/8" diameter washers. Countersink washers and fasteners level with top of wood using spade bit or similar method. Fasten subsequent nailers, where specified, using the specified screws without washers.
 6. Nailer Attachment Schedule (unless noted otherwise on the drawings)

Attachment Substrate	Perimeter Fastener Spacing (maximum)	Corner Fastener Spacing (maximum)
Structural Concrete	12" o.c.	6" o.c.
CMU (fastener into solid material)	12" o.c.	6" o.c.
Steel Deck	12" o.c.	6" o.c.
Wood	12" o.c.	6" o.c.

3.4 ERECTION

- A. Purlins and Girts: Provide rake or gable purlins with tight fitting closure channels and fascia. Secure purlins to structural framing.
- B. Framed Openings: Provide shapes of proper design and size to reinforce opening and to carry loads and vibrations imposed, including equipment furnished under mechanical or electrical work. Securely attach to building structural frame.

3.5 INSULATION INSTALLATION

- A. Install only as much insulation as can be covered with roofing membrane and completed before the end of the day's work or before the onset of inclement weather.
- B. Neatly fit insulation to all penetrations, projections, and nailers. Insulation should be loosely fitted, with gaps greater than 1/4" being filled with acceptable insulation.
- C. Where overall insulation thickness is 2 inches or greater, install required thickness in two layers with joints of second layer staggered from joints of first layer a minimum of 12 inches each direction.
- D. Areas of damage or broken corners shall be cut out and replaced with pieces 12" x 12" minimum.
- E. Fastener spacings shall be as required to meet the design wind up-lift resistance defined within this section, but no less than two fasteners per each piece of insulation.

3.6 UNDERLAYMENT INSTALLATION

- A. Install underlayment in accordance with the Manufacturer's recommendation maintaining a minimum of 3" side lap and 3" end lap. Stagger end laps a minimum of 3'.

3.7 ROOFING

- A. General: Arrange and nest panel side lap joints so that prevailing winds blow over, not into lapped joints. Apply panels and associated items for neat and weathertight enclosure. Avoid "panel creep" or application not true to line. Protect factory finishes from damage. Samples submitted will be used as basis for evaluating quality of work performed.
- B. Provide weather seal under ridge cap; flash and seal roof panels at eaves and rake with EPDM or other closures to exclude weather.
- C. Roof Sheets: Secure roof panels to structurals by means of a sliding clip fastened through a bearing plate into the structure and securely locked into panel seam. Sliding clip shall be centered in mounting clip.
 - 1. Panel seams shall be fully seamed using Manufacturer's standard forming machine. Cracking or splitting of metal or cracking, peeling, blistering or other damage to panel coating is not acceptable. Panels shall be securely fastened to eaves structural and sealed watertight.
 - 2. Panel end splices shall consist of notched roof panels fastened together and sealed weathertight. End splices shall be staggered across field of roof so that in no event end lap seams occur together in adjacent panels. End lap seams shall be tight and flat. Fish mouth between fasteners is not acceptable.
- D. Sheet Metal Accessories: Install gutters, roof curbs, ventilators, louvers, and other sheet metal accessories in accordance with Manufacturer's recommendations for positive anchorage to building and weathertight mounting.

- E. Dissimilar Materials: Where aluminum surfaces come in contact with ferrous metal or other incompatible materials, keep aluminum surfaces from direct contact by application to the other materials as follows:
 - 1. One coat of zinc chromate primer, FS TT-P-645, followed by two coats of aluminum paint, SSPC-Paint 101.
 - 2. In lieu of two coats of aluminum paint, apply one coat of high build bituminous paint, SSPC-Paint 12, applied to a thickness of 1/16" over zinc chromate primer.
 - 3. Back-paint aluminum surface where impractical to paint other surface.

3.8 TEMPORARY WATER CUTOFFS

- A. Temporary water cutoffs are to be constructed at the end of each working day to protect the insulation, roofing, building, and building interior from damage due to wind, snow, and rain.
- B. Temporary water cutoffs are to be detailed by the Contractor and approved by the Manufacturer and the Design Professional.
- C. All temporary water cutoffs shall be removed at the commencement of work the next working day.

3.9 FIELD QUALITY CONTROL

A. Water Test

- 1. After completion of the roof and prior to the installation of the cap sheet, a water test, shall be coordinated with the Owner and conducted by the Contractor in the presence of Design Professional, Owner's Roofing Observer, and Owner's Representative. The water test shall include the following procedures:
 - i. At the direction of the Design Professional, apply simulated rain over all roof areas for at least 15 minutes per area, or as otherwise directed.
 - ii. In addition to the simulated rain, direct water to all walls, windows, units, penetrations, etc. that occur adjacent to, or within each roof area, using a continuous, unforced hose stream.
 - iii. Plug all roof drains and scuppers in each drainage area and allow each drain/scupper sump to be filled to a depth of 3-4 inches. Allow to stand for a minimum of 2 hours.
 - iv. Perform any necessary corrections to defects noted (including the ensuring of positive drainage around all curbs, roof openings and crickets to roof drains or scuppers) during or after the water test procedures. Perform additional testing as necessary to further define sources of any noted leakage.
 - v. Contractor shall provide and/or arrange for necessary equipment, supplies, water, etc. as needed to perform these tests. Provide a water truck with an appropriate hose, if necessary.

3.10 PROTECTION

- A. Protect building surfaces, rooftop mounted equipment, piping, conduit, etc., against damage from roofing work. Where traffic must continue over finished roof membrane, protect surfaces.

3.11 PHASED CONSTRUCTION AND COMPLETION REQUIREMENTS

- A. Only 2 phases of metal roof construction will be permitted on this Project:
 - 1. Insulation and underlayment with all edges and penetrations fully sealed.
 - 2. Complete metal roof installation including all flashings and associated metal work completed as work progresses.
- B. Once roofing operations are started, the roofing application, including all associated metal work, must be continuous and finalized with all punch lists completed at an overall production rate of:

2,500 SF of roof plan area adjusted for slope per 40-hour work week completion rate;

or a daily rate of:

- a. 500 SF per 8-hr work day
- b. 625 SF per 10-hr work day

Unless the contractor's failure to complete the above described roof portion of the work within this time limit is justified for reasons allowed under the contract, the contractor shall reimburse the Owner for all related expenses incurred by the Owner due to such failure. These expenses may include, but not limited to the additional costs to Owner related to roof consulting and observation services.

3.12 CLEANUP

- A. Remove bituminous markings from finished surfaces.
- B. In areas where finished surfaces are soiled by work of this Section, consult Manufacturer of surfaces for cleaning advice and conform to their instructions.
- C. Remove excess materials, trash, debris, equipment, and parts from the work.
- D. Repair or replace defaced or disfigured finishes caused by work of this section.

Roofing System Manufacturer's 20 Year Warranty

Manufacturer's Warranty Number:

Effective Date:

Expiration Date:

Manufacturer Name:

School District:

Telephone #:

Fax #:

School:

E-Mail:

Project:

Address:

Project Address:

Total Warranty - Square Footage:

Designer of Record:

Roof Specification-System Name:

Telephone #:

Fax#:

Insulation Type(s):

E-Mail:

Roofing Contractor:

Address:

Address:

Telephone No.:

Fax #:

Other Information:

WARRANTY

1. 1 The Manufacturer warrants to the School District named above, that, subject to the provisions of this document, the Manufacturer will, within 3 business days, at its own expense, make or cause to be made all repairs necessary to maintain the roofing system in a watertight condition during the warranty period stated above which commences on the date of Substantial Completion. System warranty includes:
 - A. Roof membrane
 - B. Roof membrane adhesion
 - C. Roof membrane flashings (except metal or components not furnished by the Manufacturer as part of its advertised system)
 - D. Roof insulation
 - E. Roof insulation attachment / adhesion
 - F. Roof system fasteners, termination bars, and other miscellaneous accessories supplied by the roofing Manufacturer
 - G. Roof related sheet metal (edge metal, copings, counterflashing) supplied by the Manufacturer.
 - H. Metal component strip-in-plies.
 - I. Roof system attachment / adhesion to the building code defined design wind speed.
2. OWNER'S RESPONSIBILITY: The Owner will notify the Manufacturer if repairs covered by the Warranty are required. The notice will be by, Telephone, Fax, E-mail, or Mail, to the Manufacturer's office listed above within 30 days of discovery of leaks or other defects in the roofing system. The Owner will provide the Manufacturer free access to the building during regular business hours over the life of the Warranty. The Owner acknowledges that the Manufacturer has provided its Roofing Maintenance Manual, including instructions necessary for the Owner to inspect and maintain the roofing system during the warranty period.
3. EXCLUSIONS: The following are excluded from this Warranty:
 - A. Roof maintenance for corrections of conditions other than leaks.
 - B. Damage to any part of the building (other than the roofing system) or to its contents (consequential damages).
 - C. Damage resulting from repairs made to the roofing system without the Manufacturer's prior authorization.

- D. Damage resulting from any one of the following:
1. Settlement, expansion, contraction, cracking, warping, deflection or movement of roof deck, walls, coping structural members or building foundation.
 2. Natural disasters (i.e., windstorm (in excess of wind speed defined in 1. I. above), hail, flood, hurricane, cyclone, lightning, tornado or earthquake).
 3. Changes in building usage; new installations on, through or adjacent to the roofing system made after the effective date of this Warranty, unless the Manufacturer has given prior written approval of such changes in building usage or new installations.
 4. Accidents, vandalism or other uncontrollable events.
 5. Lack of positive drainage (standing water) for asphalt built-up systems.
 6. Chemical attacks on the membrane from sources unknown or not present at time of roofing installation.
 7. Falling objects, misuse or abuse of the roofing system, traffic, recreational activities or storage of material on the roofing system.
 8. Infiltration or condensation of moisture in, through or around walls, copings, building structure or underlying or surrounding areas.
 9. Movement or deterioration of metal components adjacent to the roof (except where such components are a part of the Manufacturer's advertised roofing system).
 10. Failure of materials supplied by others (except where such materials are a part of the specified roofing system certified by the Manufacturer prior to bidding the roofing work).
 11. Tests or test cuts not authorized by the Manufacturer.
 12. Failure of the Owner to provide maintenance in accord with the Roofing Maintenance Manual.
 13. Failure of the Owner to notify the Manufacturer of leaks or other defects within 30 days of discovery.

4. The Parties agree that any controversy or claims relating to this Warranty shall be first submitted to mediation under the Construction Industry Arbitration and Mediation Rules of the American Arbitration Association (Regular Track Procedures) or to such other mediation arrangement as the parties mutually agree. Participation in mediation as set forth above shall be a condition precedent to institution of any legal, equitable or arbitration proceedings regarding a controversy or claim relation to this warranty.
5. This is the sole roof system Manufacturer's 20-year warranty, any implied warranty of merchantability and fitness for a particular purpose are excluded.

In Witness Whereof: Manufacturer and Owner have caused this Warranty to be duly executed on the dates below.

MANUFACTURER: _____ OWNER:
a State of Corporation with principle office at:

BY: _____ BY:

TITLE: _____ TITLE:

DATE: _____ DATE:

- End of Section -

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions, general project requirements and Division 01 Specification Sections, apply to this Section.
- B. Documents specifically related to this section include:
 - 1. Section 00 4113 - Proposal Form: Roofing production rates required by Contract.
 - 2. Section 01 3100 – Project Management: Coordination of roofing work with Owner; roofing sequence inclusion in Project Schedule.
 - 3. Section 01 4000 – Quality Requirements: Roofing observation services and reports; Contractor’s responsibilities.
 - 4. Section 07 5423.02 – Adhered TPO Thermoplastic Membrane Roofing
 - 5. Section 07 9200 – Joint Sealants
 - 6. Section 07 9500 – Expansion Control
 - 7. Section 09 9100 – Painting
 - 8. Section 07 6113.02 – Standing Seam Sheet Metal Roofing
- C. Manufacturer of Standing Seam Sheet Metal Roofing shall be same as Sheet Metal Flashing and Trim.

1.2 SCOPE OF WORK

- A. Furnish and install roof related sheet metal work per the drawings and specifications, include all clips, sealant, fasteners, and joining to make weather and watertight.
- B. Furnish and install all gutters and rain leaders in locations as shown on drawings.

1.3 CODE COMPLIANCE

- A. The installed copings and edge metal shall comply with ANSI/SPRI ES-1 Standards and shall meet the following design wind pressures:
 - 1. Horizontal: _190_ psf
 - 2. Vertical: _190_ psf
- B. The contractor shall provide data that the sheet metal system proposed has been tested for the job site condition.

1.4 QUALIFICATIONS

- A. Installer Qualifications
 - 1. The installer of the roofing shall have been engaged in the business of installing the specified roofing system for not less than five (5) years and shall be certified by the

roofing system Manufacturer in the layout and application of this system. The installer shall have successfully installed the specified system as follows:

- a. At least once, and;
 - b. At least five (5) years prior to submitting on this Project.
2. The crew shall be composed of experienced and skilled workers in this work.

1.5 QUALITY ASSURANCE

- A. Standards: Comply with latest edition of standards specified in this section and as referenced below:
1. *ANSI/SPRI ES-1*.
 2. *Architectural Sheet Metal Manual*, Sheet Metal and Air Conditioning Contractors National Association, Fifth edition, 1993, as published by SMACNA.
 3. *The NRCA Roofing and Waterproofing Manual* – National Roofing Contractors Association.
 4. Published installation instructions from Manufacturers of selected products.
 5. *Annual Book of ASTM Standards*, Latest Revision – ASTM International.
- B. Qualifications of Installers: Use adequate number of skilled workers who are thoroughly trained and experienced in the necessary crafts, and who are completely familiar with the specified requirements and methods needed for proper performance of the work in this section.
- C. In acceptance or rejection of the work of this section, the Owner will make no allowance for lack of skill on the part of the workers.

1.6 SUBMITTALS

- A. General: Comply with the provisions of the General Conditions of the Contract and Division 01 specification sections. Submittal schedule shall allow ample time for processing and approval prior to Pre-Roofing Coordination Meeting and start of roof system installation work.
- B. Shop drawings: Show metal edge system with accessories and components in plan view, sections, and details. Include metal thicknesses and finishes, section lengths, joining details, anchorage details, flashings and special fabrication provisions for termination and penetrations. Indicate relationships with adjacent and interfacing work. Shop drawings to be prepared by metal edge system manufacturer. Provide documentation verifying ES-1 compliance, also including tested fastener type and spacing.
- C. Submit product information or material list noting fasteners, sealants, sealant primers, sealant tapes, and other required accessories.
- D. Submit physical samples of prefinished metal color: custom match architect's sample.
- E. Submit color chart or physical samples for selection of sealant color by the Architect.

- F. Submit copies of all required warranties.

1.7 MOCK UP

- A. Install a two foot long mock up sample of all proposed sheet metal flashings. Provide Architect with 10 days prior notice for review prior to commencing remainder of work.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Use all means to protect the materials of this section before, during, and after installation and to protect the work and materials of all other trades. Roof surfaces shall be protected from damage at all times.
- B. Deliver only new materials to the job site. Materials to be stored in such a manner as to be protected from rain, snow, or inclement weather. When storing materials on the roof, do not overstress the deck. All stored materials should be set over a board of polyisocyanurate insulation and/or plywood and properly secured to prevent it from coming loose during wind events.
- C. In the event of damage, immediately make all repairs and replacements to the approval of the Owner and at no additional cost to the Owner.
- D. Follow the Manufacturer's recommendations for storage of temperature sensitive materials.

1.9 SCHEDULING

- A. Work is to be performed on a daily basis with each section completed before progressing to the next day's work, unless specifically directed otherwise by the Design Professional.
- B. Substantial Completion of sheet metal flashing and trim work will be defined as the contractually required and weather tight installation of all specified roof preparation, insulation, field membrane, flashings, counter flashings, sheet metal, fasteners and caulking.
- C. All new sheet metal work shall be closely coordinated with the installation of the new roofing membrane.
- D. Sheet metal shall be installed directly after roofing work such that roofing terminations shall not be left unprotected by metal.
- E. Once roofing is started, the roofing application must be Substantially Complete within the time period required by the Contract. All punch list items must be complete prior to Final Completion.

1.10 WARRANTY

- A. The Roofing Contractor shall warrant all materials and workmanship for a period of two years from the date of acceptance of the completed work by the Owner. The Roofing Contractor shall make good any defects in materials or workmanship that may develop during the two-year period by repairing or replacing such defects at his own expense without cost to the Owner. Roofing Contractor shall use the form entitled "Sheet Metal Contractor's Warranty" provided in this section.
- B. Manufacturer's standard 20 year finish warranty covering checking, crazing, peeling, chalking, fading, and adhesion of the painted sheet metal.

- C. Coping System: Manufacturer's standard 20 year warranty covering defects in materials and workmanship, resistance to blow-off, and weathertightness, in accordance with the stated design limits.

PART 2 – PRODUCTS

2.1 GENERAL

- A. All materials used on this project shall be compatible with the existing conditions and with each other.
- B. No product shall contain any asbestos or asbestos-related products.

2.2 MATERIALS

- A. Sheet metal components, metal types, finishes, gauges/thicknesses, joint types, and ANSI/SPRI ES-1 compliance data are specified in the detail drawings.
- B. Where sheet metal is required and no material or gauge is indicated on the drawings, provide the highest quality and gauge commensurate with the referenced standards.
- C. Contractor shall use gauges or thicknesses listed in the schedule or as prescribed in the referenced standards for specific girths, whichever is greater.
- D. Continuous clip shall be fabricated with material one gauge heavier than connecting component.

2.3 MATERIAL SPECIFICATIONS

- A. Approved Products
 - 1. Basis of design: EZ Edge by Innovative Metals Company (IMETCO)
 - 2. Alternate manufacturers are subject to full compliance with specification requirements, and shall be submitted for approval as follows.
 - 3. Manufacturers not listed above must submit for approval, ten (10) days prior to bid date, the following: Manufacturer's literature; certification of testing in accordance with specification requirements and a list of five (5) similar projects in size and scope of work per Section 01 6300 "Product Substitution Procedures."
 - a. No substitutions will be permitted after the bid date of this project.
- B. Galvanized Steel
 - 1. Galvanized steel shall be G-90 material.
 - a. 22 gauge, Zinc-Coated (Galvanized) Steel Sheet, structural quality, grade 40 ksi (275 MPa).
 - 2. Specifications References
 - a. Fed. Spec. AA-S-775d.

- b. ASTM A653/A653M – Standard Specification for Steel Sheet, Zinc-coated (Galvanized) or Zinc-Iron Alloy – Coated (Galvannealed) by the Hot Dip Process.

C. Kynar Prefinished Steel

- 1. Exposed Coil-Coated Finish:
 - a. 2-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Manufacturers' approved applicator to prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - b. Coating system shall provide nominal 1.0 mil (0.025 mm) dry film thickness, consisting of primer and color coat.
 - c. Color shall be selected by custom color formulation to match dark color building stucco and Architect's sample.
- 2. Exposed window flashing: match color of metal coping.
- 3. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

2.4 METAL COPING SYSTEM

- A. General: Provide factory-formed metal coping system designed to be field assembled by attaching anchoring chairs to parapet wall and engaging coping cover to sloping continuous cleat.
- B. Characteristics.
 - 1. Coping cover.
 - a. Fabrication:
 - 1. Copings shall be factory formed from specified metal; match dark stucco building color.
 - 2. Fabricate to fit parapet wall conditions, width.
 - b. Exposed front face dimension: 6 inches
 - c. Exposed rear face dimension: 3 inches
 - d. Length: 10 feet maximum recommended length.
 - 2. Sloping continuous cleat.
 - a. Sloping continuous cleat: 20-gauge galvanized steel, width as required for parapet wall.
 - 3. Internal splice plates shall be provided at coping cover joints. Splice plates shall be 6 inches wide and finished to match the coping cover.

4. Sealant Bead: Non-curing, 100 percent solids, polyisobutylene compound sealant bead. Provide permanently elastic, nonsag, nontoxic, nonstaining bead 5/16-inch diameter in accordance with coping system manufacturer's recommendations at all splices.
5. Corners, tees, and other transitions shall be factory mitered, and post-painted to match coping covers.

2.5 DOWNSPOUT ASSEMBLY

- A. General: Provide factory-formed conductor head and downspout assembly designed to be field assembled by attaching prefabricated parts.
 1. Kynar Prefinished Steel
 - a. Exposed Coil-Coated Finish:
 - i. 2-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Manufacturers' approved applicator to prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - ii. Coating system shall provide nominal 1.0 mil (0.025 mm) dry film thickness, consisting of primer and color coat.
 - iii. Custom color formulation to match building stucco dark color and Architect's sample.
- B. Conductor Head.
 1. Fabricate leader / conductor heads from formed sheet metal with tabbed and riveted joints as indicated on drawings as required for a complete, secure, functional installation.
 2. Outlet Size: Design leader/conductor heads to accommodate 6-inch square downspouts.
 3. Edges: Turn back all exposed edges to form 1/2 inch hem.
- C. Downspouts.
 1. Shape & Size: 6 inch square downspout with a smooth surface.
 2. Fabricate downspouts with roll forming downspout machine in maximum lengths to eliminate field joints. Provide downspouts with angled bottom boot.
 3. Straps: Provide sheet metal straps with fasteners to attach downspout to exterior walls fabricated from material and finish to match downspout.
 4. Canopy drainage system: 4" diameter roof drain pipe (horizontal) connects to 6" square downspout (vertical) at canopy soffit; provide "transition boot" round to square at all canopy downspout locations.
 5. Downspout to inlet Grate : Provide downspouts with transitions brackets and other accessories as indicated on Drawings and reviewed shop drawings or as otherwise required for a complete, secure, functional installation.

2.6 CARBON STEEL FASTENERS

- A. All fasteners shall be carbon steel with corrosion-resistant coating, unless otherwise noted. Fasteners shall show no more than 15% red rust corrosion after 30 cycles of Kesternich testing.
- B. Masonry / Concrete Fasteners
1. Fasteners shall be threaded or expansion type as required by site conditions.
 2. Threaded fasteners shall be corrosion-resistant with hex washer head.
 3. Expansion fasteners shall be zinc-alloy jacketed with stainless steel drive pin and mushroom head (nylon or plastic anchors are not approved).
 4. Corrosion-resistant, watertight, EPDM sealing washer shall be supplied for either threaded or expansion type fasteners.
 5. Fasteners shall be approved by FM Global.
 6. Approved Products
 - a. Tapcon Hex Washer Head with Blue Climaseal or White UltraShield Coating by ITW Buildex
 - b. Tapper with Perma-Seal Coating by Powers Fasteners, Inc.
 - c. Metal Hit Anchor by Hilti
 - d. Zamac Hammer-Screw with Carbon Steel Drive Screw by Powers Fasteners, Inc.
 - e. Masonry Anchor by OMG
 - f. Prior Approved equal
 7. Fasteners to be nominal $\frac{1}{4}$ " thickness minimum and of sufficient length to penetrate the masonry/concrete 1".
- C. Steel / Wood Fasteners
1. Corrosion-resistant, self-drilling, self-tapping screw with hex washer head for exposed fastening.
 2. Corrosion-resistant, watertight, EPDM sealing washer for exposed fastening.
 3. Approved Products – Steel Fasteners
 - a. Tek Screw with Climaseal Coating by ITW Buildex
 - b. Dekfast Zac Anchor with Sentri XP Coating by SFS intec, Inc.
 - c. Owner approved equal
 4. Approved Products – Wood Fasteners

- a. TruGrip GT with Climaseal Coating by ITW Buildex
 - b. Dekfast Zac Anchor with Sentri XP Coating by SFS intec, Inc.
 - c. Owner approved equal
5. Fasteners to be nominal $\frac{1}{4}$ " thickness minimum and of sufficient length to penetrate the steel $\frac{1}{2}$ " or into wood minimum 1".
 6. $1\frac{1}{4}$ " x 11-gauge, galvanized, ring shank roofing nails shall be used for concealed fastening into wood.

D. Steel / Wood Fasteners

1. Corrosion-resistant, stainless steel, self-drilling, self-tapping screw with hex washer head for exposed fastening.
2. Stainless steel, watertight, EPDM sealing washer for exposed fastening.
3. Approved Products – Steel Fasteners
 - a. 12 - 14 Scots Tek Screw with Climaseal Coating by ITW Buildex
 - b. Owner approved equal
4. Approved Products – Wood Fasteners
 - a. 17 - 14 Scots Tek Screw with Climaseal Coating by ITW Buildex
 - b. Owner approved equal
5. Fasteners to be of sufficient length to penetrate the steel $\frac{1}{2}$ " or into wood minimum 1".
6. $1\frac{1}{4}$ " x 11-gauge, stainless steel, ring shank, roofing nails shall be used for concealed fastening into wood.

E. Nailers For Roofing

1. Nailers are to be installed as per detail drawings.
2. Discard units of material with defects that might impair quality of work and units that are too small to use in fabricating work with minimum joints or optimum joint arrangement.
3. Set nailers to required levels and lines with members plumb and true.
4. All perimeter nailers shall be of uniform height within a given roof section.
5. Nailers shall be installed with $\frac{1}{4}$ " gap between ends of adjoining pieces.
6. Stacked nailers shall have the joints staggered a minimum of 24".
7. Nailers shall be fastened in accordance with the following schedule:

- a. Fasteners in 6" or wider (nominal) lumber shall be installed in two (2) rows, staggered on third of nailer width. Listed spacing's indicate distance between fasteners in adjacent rows.
- b. Two (2) fasteners shall be installed within 6" of each nailer end.
- c. Corner fastener spacing shall extend 8' from all outside building corners.
- d. Where two or more nailers are installed, each nailer shall be fastened independently.
- e. Over all deck types, the bottom nailer shall be fastened using the specified fasteners and 5/8" diameter washers. Countersink washers and fasteners level with top of wood using spade bit or similar method, Fasten subsequent nailers, where specified, using the specified screws without washers.
- f. Nailer Attachment Schedule (unless noted otherwise on the drawings)

Attachment Substrate	Perimeter Fastener Spacing (maximum)	Corner Fastener Spacing (maximum)
Structural Concrete	12" oc	6" oc
CMU (fastener into solid material)	12" oc	6" oc
Steel Deck	12" oc	6" oc
Wood	12" oc	6" oc

2.7 OTHER MATERIALS

A. Membrane Closure / Cover

- 1. Sheet waterproofing underlayment at parapets, expansion joints, etc., shall be 36-mil (minimum) single-ply material and associated seaming materials. Sheet waterproofing material shall be compatible and approved by the primary roofing membrane Manufacturer. Must meet ASTM 1970 and low temperature flexibility of at least 20 degrees F.

B. Sealants and Related Accessories

- 1. General: Except as specifically otherwise directed by the Owner's Representative, use only the type of sealants described in this section.

g. Silyl-Termination Polyether (Hybrid) Sealant

1) Approved Products

- A) Sonolastic 150 VLM by BASF Building Systems
- B) Prior Approved Equal

2. Cleaner

- a. Industrial solvent recommended by the sealant Manufacturer, such as Isopropyl Alcohol, Naphtha, Mineral Spirits, Xylol, Toluene, MEK, or Manufacturer-supplied cleaner.

3. Primer

- a. General: Use only those primers that are specifically recommended for this installation by the caulking Manufacturer.
- b. Primer shall be one of the following:
 - 1) Primer 733 BASF Building Systems
 - 2) Prior Approved Equal

4. Backer Rod

- a. General: Use only those backup materials that are specifically recommended for this installation by the sealant Manufacturer and that are non-absorbent, non-staining, and non-gassing when punctured. Backup materials must be 1½ times the width of the joint.
- b. Backer rod shall be one of the following:
 - 1) Soft Backer-Rod by BASF Building Systems
 - 2) Prior Approved Equal

5. High Temperature Resistant Sealant

- a. Trade Mate® Hi-Temp Silicone Sealant by Dow Corning Corporation
- b. Prior Approved equal

C. Sealant Tape

- 1. Permanently elastic isobutylene tripolymer tape or isobutylene isoprene copolymer tape that will bond to galvanized steel; aluminum; siliconized polyester, and polyvinyl fluoride painted metals; as well as wood, concrete, etc., 1/8" x 1" nominal cross section, meeting Federal Specification TT-C 1796A, Type II, Class B, with minimum 20 psi adhesive tensile strength according to ASTM C 907, with a service temperature range of -60° F to 212° F.
 - a. Approved Products
 - 1) Sika Lastomer – 95 Gray by Sika Corp.
 - 2) Sika Lastomer – 93 Black by Sika Corp.
 - 3) Sika Lastomer – 65 White by Sika Corp.

D. Pre-manufactured Downspout Assembly

1. Provide 1/8" x 2" downspout straps, spaced per manufacturer recommendation, in custom color to match downspout and building stucco color; install per EIFS manufacturer's detail to protect EIFS finish and water tightness.

E. Solder

1. ASTM B 32, flux type and alloy composition as required for use with metals to be soldered.

F. Rivets

1. Use stainless steel for galvanized steel.
2. Not less than 1/8" diameter.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions under which work of this section will be installed. Correct conditions detrimental to the proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

3.2 FABRICATION

- A. Sheet metal shall be formed accurately to sheet shapes as indicated on the drawings and in conformance with details on the approved shop drawings. Contractor shall be responsible for all dimensions.
- B. Counter flashing shall be furnished where indicated on drawings (2-piece: reglet/receiver and counterflashing insert). Form flashing sections not less than 10'0" in length, unless otherwise approved prior to fabrication and installation. Counter flashing shall overlap base flashing a minimum of 3".
- C. Coping caps and edge metal shall be furnished where indicated on drawings. Form coping and edge metal in sections not less than 10'0" in length, unless otherwise approved prior to fabrication and installation.
- D. Where loose lock lap joints are specified on the drawings, adjacent sections of metal shall overlap a minimum of 3".
- E. Where joint covers are specified on the drawings, they shall be slightly larger than the primary component to ensure a proper fit. Edges of joint covers shall be tipped toward primary component to form a compression seal.
- F. Miter all inside and outside corner joints in coping caps, edge metal, and expansion joints. Joints adjacent to inside and outside corners shall be placed exactly 24" each direction from the corner, unless otherwise approved prior to fabrication and installation.
- G. Break counter flashing, coping cap, or edge metal sections where they cross building expansion joints, if applicable.

- H. Horizontal flanges of edge metal, soil pipe leads, pitch pans, lower flanges, pipe jacks, etc., shall be 4" minimum with rounded corners.
- I. All exposed edges of cut sheet metal shall be folded back on concealed surfaces.
- J. Form, fabricate, and install all sheet metal to adequately provide for expansion and contraction in the finished work.
- K. Where a continuous clip is specified on the drawings, the primary component shall be continuously crimped along the bottom edge of the clip. Joints should be staggered with primary component joints.
- L. Fabricate radial coping/edge metal in uniform length sections using radial components with finished edges.

3.3 DISSIMILAR METALS

- A. Dissimilar materials in contact, which are subject to electrolysis, shall be protected against such action prior to installation. Protective materials shall not be visible after installation. Protect metals using coatings recommended by Manufacturer or separated using felt or EPDM membrane.

3.4 WEATHERPROOFING

- A. Finish all sheet metal watertight and weather tight where so required.
- B. Where lap seams do not have a joint cover, lap 3" minimum according to pitch.
- C. Make all lap seams in the direction of the water flow.
- D. Where roof membrane is not already carried over top of parapet wall, expansion joint blocking, etc., the top of each is to be covered with sheet waterproofing membrane (or the flashing membrane material if the roof system is a single-ply). Unless otherwise shown on the drawings, the membrane is to be fastened only on sides as required to hold it in place and make the wall or curb watertight until sheet metal cover can be installed over it. All laps in the membrane material shall be seamed watertight per the Manufacturer's published installation instructions.

3.5 JOINTS

- A. Join parts with rivets or sheet metal screws where necessary for strength or stiffness.
- B. Provide suitable watertight expansion joints for all sheet metal as required for proper installation in accordance with the schedule of roof related sheet metal and detail drawings.
- C. Sealant application shall be neatly and thoroughly performed for a watertight seal. Sealant shall be installed within all loose lock joints under joint cover plates, and in other locations shown on the drawings. All exposed caulking joints shall be dry tooled to the profile shown on the detail drawings. If required, Contractor shall build custom tools on job site to provide the specified profile(s).
- D. Surfaces to receive sealant shall be thoroughly cleaned as recommended by the sealant Manufacturer. All bitumen coating materials, roof cement, adhesive residue, rust, old caulking and/or other contaminants shall be removed down to the substrate to which sealant bonding is intended.

- E. All surfaces to receive sealant shall be primed initially with the sealant Manufacturer's recommended primer.
- F. Provide solder/weld joints where noted on the drawings.

3.6 FASTENING

- A. Secure metal as per manufacturer's drawings. Do not in any case install exposed fasteners on a horizontal plane, unless specifically shown on a particular detail drawing.
- B. Do not fasten adjacent coping, counter flashing, or edge metal sections together at laps or at joint covers, to limit expansion/contraction ability. Fasten through center of joint cover through butt joint gap between primary component sections.
- C. Embedded metal flanges are to be fastened 3" o.c., staggered.
- D. The specified spacing for all fasteners in perimeter metalwork shall be reduced by a factor of two in the corner zones of each roof section. Corner zones shall be as calculated based upon the applicable version of ASCE-7.
- E. For concealed fastening into wood, use annular ring shank roofing nails.
- F. For fastening into concrete, use masonry/concrete anchors with EPDM washers. Use only metal anchors. Plastic anchors shall not be used.
- G. For exposed fastening into wood, use screws with EPDM washers. Deformed shank nails shall not be used.
- H. Ensure that fasteners are not overdriven such that EPDM washer damage results. Remove and replace all such damaged fasteners, using oversized fasteners.

3.7 PROTECTION

- A. Roof surfaces and flashing shall be adequately protected to prevent damage during the installation of metalwork. The Contractor shall repair, at no cost to the Owner, any materials damaged.

3.8 CLEANUP

- A. Debris from sheet metal work shall be frequently removed from building site as it accumulates.
- B. Leave job site absolutely clean at completion of work, and properly dispose of all construction debris such as metal trimmings, fasteners, rivet nails, caulk tube ends, etc.

SHEET METAL CONTRACTOR'S WARRANTY

Trade:

Contractor:

Contract Number and Date:

Project and Location:

Area of Roof Installation:

Date of Acceptance
(Effective Warranty Date):

1. Contractor warrants to Owner that the roof related sheet metal has been installed in accordance with the specifications of the contract referenced above, and the specifications of the Manufacturers of all materials used in performance of the work.
2. Contractor warrants to Owner that Contractor for a period of two (2) years commencing with the date of Owner's acceptance of the installation, will make good any deficiencies that develop as a direct result of workmanship defects, by repairing or replacing such defects. All corrective work shall utilize materials and installation procedures in strict accordance with the specifications. The Contractor will respond within 24 hours and repair within five business days, any leaks or defects in the roofing assembly.
3. Contractor warrants to Owner that Contractor for a period of two (2) years commencing with the date of Owner's acceptance of the installation, will maintain all sheet metal flashing in a watertight condition without cost to the Owner.
4. Contractor's liability hereunder shall be limited to the repair or necessary replacement of any defective component of the work without cost to Owner and shall not include incidental or consequential damages.

CONTRACTOR

By:

Title:

Company:

Date Executed:

- End of Section -

SECTION 07 72 00 - ROOF ACCESSORIES

PART 1 -GENERAL

1.1 WORK INCLUDED

- A. Prefabricated roof hatch with integral support curbs, operable hardware, and counter-flashing.
- B. Roof hatch safety rail.

1.2 RELATED SECTIONS:

- A. General Requirements: Division 1
- B. Concrete Division 3
- C. Metal Decking: Section 05 3000
- D. Rough Carpentry: Section 06 1000
- E. FM TPO Thermoplastic Roofing: Section 07 423.01
- F. Sheet Metal Flashing and Trim: Section 07 6200
- G. Joint Sealants: Section 07 92 00

1.3 SUBMITTALS

- A. Shop drawings in accordance with Section: 01 33 23

1.4 WARRANTY

- A. Provide a five (5) year written warranty on unit, caulking, and flashing.
- B. Warranty to cover repair or replacement in event of leakage, defective design, materials, or construction.
- C. Warranty signed jointly by installer, contractor, and supplier.

PART 2 -PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design
 - 1. Acudor G3844 G-Series Roof Hatch and Roof Hatch Safety Rail #RHSR as manufactured by Acudor Products, Cedar Grove, NJ, www.acudor.com.
- B. Subject to compliance with requirements provide products from acceptable manufacturers of security roof hatch:
 - 1. Dur-Red Products Cudahey, CA, www.dur-red.com.
 - 2. O’Keeffe’s Inc., San Francisco, CA, www.okeeffes.com.
 - 3. Royalite Manufacturing, Inc. , San Carlos, CA, www.royalite-mfg.com.
 - 4. Subject to compliance with requirements, products of approved substitution may be used on Architect’s review of submittals per Section 01 600 “Materials and Equipment Substitutions.”

- C. Curb, curb frame, and lid shall be 14 gauge galvanized steel, fully welded, and ground smooth for absolute weather tightness: Minimum 3/16" thick, curbs, cover and exposed edges; galvanized G90.
- D. Cover: With minimum 3 1/2" weather flange and pre-drilled holes.
- E. Insulation: #70 fiberglass insulation, protected by a 22-gauge door liner, painted with 2 coats of zinc dust primer.
 - 1. Rigid board glass or mineral fiber, laminated between sheets of metal.
 - 2. Insulate curbs and covers with minimum 1" thick insulation.
- F. Gaskets: Tubular or fingered design; neoprene, polyvinyl chloride, or molded block design sponge neoprene.
- G. Hardware:
 - 1. Roof hatch latch: self-latching outside turn handle with inside lever handle. Inside and outside padlock provisions.
 - 2. Operating devices: Fully enclosed compression spring operators and automatic hold open with red vinyl grip release.
 - 3. Finish: Cadmium plated.
 - 4. Hinges: steel butt hinges with brass pin.
- H. Construct for 40 PSF live loading.
- I. Finish:
 - 1. Rust inhibiting white primer, minimum 2.0 mils dry
 - 2. Finish painting by Section 09 90 00
- J. Size: 30 inches x 36 inches

2.2 FABRICATION

- A. Fabricate from steel sheet and plate in shop, to sizes indicated; modify if necessary to comply with requirements.
- B. Where standard units are not available for sizes and types required, provide custom fabricated units.

PART 3 -EXECUTION

3.1 INSPECTION

- A. Verify acceptability of substrate for installation.
- B. Correct unsatisfactory conditions.

3.2 INSTALLATION

- A. Coordinated with decking and roofing.
- B. Securely anchor units by bolting or welding, as appropriate.
- C. Flash and counter-flash to provide weather tight installation.

D. Touch up abraded areas with zinc rich paint.

3.3 ADJUSTMENT

A. After installation and before acceptance adjust to provide smooth, easy operation.

END OF SECTION 07 72 00

SECTION 07 8400 - FIRESTOPPING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Fireproof firestopping materials.

1.2 RELATED SECTIONS

- B. Section 09 2100 - Gypsum Board.
- C. Section 07 9200 - Joint Sealants

1.3 REFERENCES

- A. ASTM E814 - Test Method of Fire Tests of Through Penetration Firestops.
- B. UL - Fire Hazard Classifications.
- C. UL 1479 - Fire Tests of Through-Penetration Firestops.
- D. UL 2079 - Fire Tests of Joint Systems

1.4 DEFINITION

- A. Firestopping: A sealing or stuffing material or assembly placed in spaces between building materials to arrest the movement of smoke, heat, gases, or fire through wall or floor openings.

1.5 SYSTEM DESCRIPTION

- A. Firestopping Materials, to include compound, forming material and fill, void or cavity material as required: ASTM E814 & UL 1479 to achieve a fire rating as noted on Drawings.
- B. Surface Burning: ASTM E84 with a flame spread / smoke developed rating of 0/0.
- C. Firestop all interruptions to fire rated assemblies, materials, and components.

1.6 SUBMITTALS

- A. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three (3) years documented experience.
- B. Applicator: Company specializing in performing the work of this section with minimum 5 years documented experience.

1.8 REGULATORY REQUIREMENTS

- A. Conform to UL for fire resistance ratings and surface burning characteristics.

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply materials when temperature of substrate material and ambient air is below 40 degrees F.
- B. Maintain this minimum temperature before, during, and for three (3) days after installation of materials.

PART 2 – PRODUCTS

2.1 FORMULATED COMPOUND OF INCOMBUSTIBLE FIBERS

- A. Manufacturers:
 - 1. Tremco - Firestop System for floor and wall penetration.
 - 2. Subject to compliance with requirement, the following manufacturers are also approved for use in the Project
 - a. Hilti
 - b. STI
 - 3. Subject to compliance with requirements, products of equal performance may be used based on the Architect's review of submittals per Section 01 6300 "Product Substitution Procedures."
- B. Material: Formulated compound mixed with incombustible non-asbestos fibers; conforming to the following:
 - 1. Density: 45 lb/cu ft (720.9 kg/cu m).
 - 2. Durability and Longevity: Permanent.
 - 3. Endothermic and/or entumescent formulations.

2.2 ACCESSORIES

- A. Primer: Type recommended by firestopping manufacturer for specific substrate surfaces.
- B. Installation Accessories: Any devices required to position and retain materials in place.

2.3 FINISHES

- A. Color: Red or pinkish.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify openings are ready to receive the work of this section.

3.2 PREPARATION

- A. Clean substrate surfaces of dirt, dust, efflorescence grease, oil, loose material, or other matter which may affect bond of firestopping material.
- B. Remove incompatible materials which may affect bond.

3.3 APPLICATION

- A. Install safing insulation with normal density of 4 pcf completely around penetrate.
- B. Install material at walls or partition openings which contain penetrating sleeves, piping, ductwork, conduit and other items, requiring firestopping.
- C. Apply materials in accordance with manufacturer's instructions.
- D. Apply fire safing insulation material to a thickness of 3” minimum.

3.4 CLEANING

- A. Clean Work under provisions of Section 01 7700 “Closeout Procedures”.
- B. Clean adjacent surfaces of firestopping materials.

3.5 PROTECTION OF FINISHED WORK

- A. Protect adjacent surfaces from damage by material installation.

END OF SECTION 07 8400

SECTION 07 9200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work includes, but is not necessarily limited to, all sealants and joint treatment necessary to provide a positive barrier against passage of moisture and air, at locations required and as described below. Contractor shall furnish all supplementary items necessary for proper installation using manufacturer's components only.

1.2 RELATED WORK

- A. Section 07 8400: Firestopping
- B. Section 03 3310: Cast-In-Place Architectural Concrete
- C. Section 09 2100: Gypsum Board

1.3 SUBMITTALS

A. Product Data

- 1. Provide complete materials list, including catalogue data, of all materials, equipment, and products for work in this section.

B. Certifications

- 1. As a condition of acceptance, submit certification stating that sealants and joint treatments are installed per submittal and are complete and ready for intended function.

1.4 COORDINATION

Work in this section requires close coordination with work in other sections, sequence all work to assure an orderly progress in the project, without removal of previously installed work, and so as to prevent damage to finishes and products.

1.5 PRODUCT HANDLING

A. Protection

- 1. Use all means necessary to protect work in this section before, during and after installation and to protect the installed work and materials of all other trades.

B. Replacements

- 1. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

C. Product Storage

1. Do not retain on site any material which has exceeded the shelf life recommended by the manufacturer.

1.6 WARRANTY

1. Provide a warranty against material or workmanship failure for a period of two years.

PART 2 - PRODUCTS

2.1 SEALANTS

A. General

1. Unless noted otherwise, all sealants shall be the products of the designated manufacturers. Subject to compliance with requirements, comparable products may be used based on Architect's review of submittals per Section 01 3300 "Submittal Procedures."
2. All sealants for each application shall be the product of a single manufacturer, suitable for the intended use.

B. Product Characteristics

	<u>Location:</u>	<u>Sealant:</u>
1.	Exterior Sealant ASTM C920 Grade NS Sonneborn NPI	Tremco Dymonic Vulkem 116
2.	Horizontal Sealant ASTM C920 Grade P or NS	Tremco THC-900/901 Vulkem 245 Sonneborn SL-2
3.	Interior Caulk ASTM C834	Tremco Acrylic Latex 834 Pecora AC20 Sonneborn Sonolac
4.	Acoustical Sealant Non Rated - Non Hardening	Tremco "Acoustical Sealant Lowery's" 10A Acoustical Sealer
5.	Silicone Sealant Sanitary	GE SCS 1702
6.	Silicone Sealant Structural GE SCS 1200	Tremco Spectrem 2
7.	Interior concrete slab joints	BASF, Sonneborn SONOLISTIC SL 2

C. For other applications provide products especially formulated for the proposed use and approved in advance by the Architect.

D. Colors:

1. Colors for each sealant installation will be selected by the Architect from full color line normally available from the specified manufacturer.
2. Should such standard color not be available from the approved manufacturer except at additional charge, provide such colors at no additional cost to the Owner.

2.2 PRE-COMPRESSED JOINT FILLER

A. Manufacturer

1. Design is based on products manufactured by:
EMSEAL Joint Systems Ltd.
48 Union Street 203-967-3828
Stamford CT 06906 1-800-872-3677
2. Subject to compliance with requirements, comparable products may be used based on Architect's review of submittals per Section 01 62 00 "Product Options." (or equal performance)

B. Product Characteristics

1. Product: Emseal Greyflex Expanding Foam
2. Material: High density open cell polyurethane foam with stabilized acrylics. Precompressed in shrink wrapped lengths or in tape form with adhesive backing on reels.
3. Size: Compression to 25% of joint dimension.

2.3 PRIMERS

A. Use only those primers which have been tested for durability on the surfaces to be sealed and are specifically recommended for this installation by the manufacturer of the sealant used.

2.4 BACKUP MATERIALS

A. Use only those backup materials which are specifically recommended for this installation by the manufacturer of the sealant used, which are non-absorbent, and which are non-staining.

2.5 BOND BREAKER

A. Bond breaker, if required, shall be as recommended by the sealant manufacturer.

2.6 MASKING TAPE

A. For masking around joints, provide an appropriate masking tape which will effectively prevent application of sealant on surfaces not scheduled to receive it, and which is removable without damage to substrate.

2.7 SOLVENTS

- A. Solvents or cleaning agents shall be as recommended by the sealant manufacturer and the adjacent surface/finish manufacturers.

2.8 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Examine the areas and conditions under which the work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 PREPARATION

A. Concrete and Masonry Surfaces:

1. Install only on surfaces which are dry, sound, and well brushed, wiping free from dust.
2. At open joints, remove dust by mechanically blown compressed air if so required.
3. To remove oil and grease, use sandblasting or wire brushing.
4. Where surfaces have been treated, remove the surface treatment by sandblasting or wire brushing.
5. Remove laitance and mortar from joint cavities.

B. Steel Surfaces:

1. Unprimed or unfinished steel surfaces in contact with sealant:
 - a. Sandblast as required to achieve acceptable surface for bond.
 - b. If sandblasting is not practical, or would damage adjacent finish, scrape the metal or wire brush to remove mill scale and rust.
 - c. Use solvent to remove oil and grease, wiping the surfaces with clean white rags only.
2. Remove protective coatings on steel by sandblasting or by using a solvent which leaves no residue.

3.3 INSTALLATION OF BACKUP MATERIAL

- A. When using backup of tube or rod stock, avoid lengthwise stretching of the material. Do not twist or braid hose or rod backup stock. Install in clean dry joint at the proper depth to provide manufacturer's recommended sealant dimensions.

3.4 PRIMING

- A. Use only the primer approved by the architect for the particular installation, applying in strict accordance with the Manufacturer's recommendations as approved by the Architect.

3.5 BOND-BREAKER INSTALLATION

- A. Provide an approved bond-breaker where recommended by the Manufacturer of the sealant, and where directed by the Architect, adhering strictly to the Manufacturers' installation recommendations.

3.6 INSTALLATION OF SEALANTS

- A. Prior to start of installation in each joint, verify the joint type according to details on the drawings, or as otherwise directed by the Architect, and verify that the required proportion of width of joint to depth of joint has been secured.
- B. Equipment:
 - 1. Apply sealant under pressure with power-actuated hand gun or manually-operated hand gun, or by other appropriate means.
 - 2. Use guns with nozzle of proper size, and providing sufficient pressure to completely fill the joints as designed.
- C. Thoroughly and completely mask joints where the appearance of primer or sealant on adjacent surfaces would be objectionable.
- D. Install the sealant in strict accordance with the manufacturer's recommendations, thoroughly filling joints to the recommended depth.
- E. Tool joints to the profile shown on the Drawings, or as otherwise recommended by the manufacturer if such profiles are not shown on the Drawings.
- F. Methods: Fire Stop Sealant and Foam
 - 1. Install in strict accordance with U.L. listed system/assembly.
 - 2. All gaps or cracks left after damming material are in place shall be sealed.
 - 3. Immediately after mixing, dispense liquid foam into the penetration opening.
 - 4. Allow for foam expansion.
 - 5. When dispensing continuously, do not exceed measured snap time or a maximum of three minutes, whichever is less.
 - 6. If opening is not filled when shot reaches measured swap time or the three minute maximum, stop application to allow foam to set for at least 15 minutes.
 - 7. Repeat injection and cure procedure until the opening is filled.
 - 8. Leave dam in place for 24 hour to allow foam to fully core.
 - 9. Inspect cured penetration seal after 24 hours by removing damming material.
 - 10. Cured foam should completely fill penetration. Fill all gaps with freshly mixed fire stop foam or fire stop sealant.
 - 11. Reinspect again after 24 hours.
 - 12. Damming materials required to achieve a fire rating must be returned to the penetration.
- G. Cleaning up:
 - 1. Remove masking tape immediately after joints have been tooled.

2. Clean adjacent surfaces free from sealant as the installation progresses, using solvent or cleaning agent recommended by the manufacturer of the sealant used.
3. Upon completion of the work of this Section, promptly remove from the job site all debris, containers, and surplus material derived from this portion of the Work.

END OF SECTION 07 9200

SECTION 07 9500 - EXPANSION CONTROL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Furnish and install Expansion Control Systems as shown on Drawings and as specified herein.

1.2 SUBMITTALS

- A. General: Submittals requirements are specified in Section 01330, Submittals.
- B. Product Data: Submit manufacturer's specifications, standard colors, and installation instructions.
- C. Provide Factory standard warranty for minimum of 1 year from date of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Except as otherwise specified herein, or specifically approved by Architect, expansion control shall be products of one of the following manufacturers:
 - 1. Balco, Inc.
 - 2. C/S Group
 - 3. MM Systems
- B. Models specified are based on MM Systems, or prior approved equal, as follows:
 - 1. Wall-to-Wall (Exterior):
 - a. 1.5" expansion joint: WJL 2-1 Series
 - 2. Roof to Wall (Exterior):
 - a. 1.5" expansion joint: ERJL 200 Series
 - 3. Wall-to-Wall and Ceiling-to-Ceiling (Interior):
 - a. 1.5" expansion joint: X-M 1.5 and X-N 1.5 Series

PART 3 - EXECUTION

3.1 PREPARATION

- A. In addition to requirements of these specifications comply with manufacturer's instructions and recommendations for phases of Work, including preparing substrate, applying material and protecting installed units.
- B. Coordinate and furnish anchorages, setting drawings, templates, and instructions for installation of expansion joint assemblies to be embedded in or anchored to concrete or to have recesses formed into edges of concrete slab for later placement and grouting-in of frames.
- C. Fastening to in-place construction: Provide anchorage devices and fasteners where necessary to secure expansion joint assemblies to in-place construction, including threaded fasteners with drilled-in expansion shields for masonry and concrete where anchoring members are not embedded in concrete. Provide fasteners of metal, type and size to suit type of construction indicated and provide for secure attachment of expansion joint assemblies.
- D. Surface preparation: Clean surfaces to receive expansion joint system of any substance that might obstruct proper installation.
 - 1. Fill voids in substrate surface larger than 1/4 inch in diameter with grout to provide smooth surface for joint assembly installation.

3.2 INSTALLATION

- A. Before installation of joint systems, cut and fit lengths to conform to substrate condition. Form tight end joints. Adjust components to align with expansion joint width and to be flush with adjacent finish surfaces or recessed according to manufacturer's written instructions.
 - 1. Install interior expansion joint assemblies flush with and tight against adjacent finish materials.
 - 2. Where applicable, space anchors in accordance with manufacturer's instructions, with anchors within at least 6 inches of each end and a maximum 24 inches on center.
- B. Continuity: Maintain continuity of expansion joint assemblies with a minimum number of end joints.
- C. Fire resistive joints: Install fire resistive joints in accordance with federal, state and local building codes using manufacturer's recommended procedures. Install transition and end joints to provide continuous fire resistance and in accordance with manufacturer's instructions.
- D. Install joint assemblies with minimum of end joints. Where end joints do occur, align edges of assembly across joint.

3.3 PROTECTION

- A. Protect the system and its components during construction. Subsequent damage to the expansion joint system will be repaired at the general contractor's expense. After work is complete, clean exposed surfaces with a suitable cleaner that will not harm or attack the finish.

3.4 CLEANING

- A. During the course of the Work and on completion of the Work, remove excess materials, equipment and debris and dispose of away from premises. Leave Work in clean condition in accordance with Section 01500 Construction Facilities and Temporary Controls.

END OF SECTION 07 9500

SECTION 08 1113 – HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Pressed steel hollow metal doors with flush faces.
- B. Standard and fire rated pressed steel door frames.
- C. Borrowed light frames.

1.2 RELATED WORK

- A. Section 06 10 00: Rough Carpentry
- B. Section 08 14 00: Wood Doors
- C. Section 08 70 00: Hardware
- D. Section 08 81 00: Glass Glazing
- E. Section 09 91 00: Painting

1.3 QUALITY ASSURANCE

- A. Provide doors and frames with fire resistance ratings indicated and which are identical in materials and type of construction to those used in assemblies which have been tested and are labeled and listed by an acceptable testing agency.
- B. Comply with NFPA Standard No. 80. Provide metal label indicating compliance attached to frame and door with rivets.

1.4 SUBMITTALS

- A. Indicate general construction, configurations, jointing methods, reinforcements, locations of cut-outs for glazing, anchorage methods, hardware locations, and installation details, and electrical requirements.

1.5 REGULATORY REQUIREMENTS

- A. Fire Rated Door Construction: Conform to ASTM E-152.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect doors with resilient packaging.

1.7 SEQUENCING

- A. Coordinate the efforts of the various trades affected by the work of this section. Installation of the door frame shall be to tolerances specified and according to manufacturers' installation instructions.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Hot Rolled Steel Sheets and Strip: Commercial quality carbon steel, pickled and oiled, complying with ASTM A 569 and ASTM A 568.
- B. Cold Rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A 366 and ASTM A 568.

2.2 HOLLOW METAL DOORS

- A. Seamless, hollow steel construction with sound deadening honeycomb core for interior doors. Insulation core on exterior doors.

2.3 METAL FRAMES

- A. Welded frames, minimum thickness 16 gage (1.52 mm) for door frames. 18 gage (1.21 mm) for interior borrowed lights. Provide loose stops on room side of frame fastened with theft proof screws.

2.4 FIRE RATED UNITS

- A. Provide labels on all fire rated units. Place where visible when doors or frames are installed in position.

2.5 DOOR FABRICATION

- A. Form door face sheets from one sheet cold rolled steel. 18 gage (1.21 mm) for interior doors and 16 gage (1.52 mm) for exterior doors. Mechanically interlock longitudinal seams of doors on vertical edge. Weld seams, fill and grind smooth. Close top and bottom edges as integral part of door construction or by addition of minimum 16 gage inverted steel channels.
- B. Cores:
 - 1. Interior Doors: Laminate a honeycomb core with a crushing strength of 4000 psf (19529 kg/m²) and shear strength of 1100 psf (5370 kg/m²) to the inside of both face sheets with adhesive.
 - 2. Exterior Doors: Insulate with foamed in place polyurethane or adhesive laminated polystyrene or polyurethane. Prevent delamination between face sheets and insulation during operation of door. Provide thermal rated assemblies with U factor of 0.24.
 - 3. Labeled Doors: Rigid mineral fiberboard with a compressive strength of 8000 psf.
- C. Fill surface depressions with metallic paste filler and grind to smooth uniform finish.
- D. Reinforce and prepare doors to receive hardware as follows. Refer to Section 08710 for hardware requirements.

1. Hinges: 10 gage (3.42 mm).
2. Concealed hardware: 14 gage (1.90 mm).
3. Surface hardware: 14 gage (1.90 mm).

E. Chemically treat surfaces and apply one coat of primer.

2.6 WELDED FRAME FABRICATION

A. Fabricate frames, concealed stiffeners and reinforcement from either cold rolled or hot rolled steel. Accurately form and cut mitered corners of welded type frames. Secure headers and jambs by welding on inside surfaces. Grind welded joints to smooth uniform finish. Provide removable steel spreader fastened to bottom of each frame.

B. Accurately cope and securely weld butt joints of mullions and transoms of borrowed lights. Grind welded joints to smooth uniform finish.

C. Reinforce frames wider than 4 feet (1.2 m) with 12 gage (2.65 mm) thick formed steel channels welded in place, flush with top of frames.

D. Provide three 18 gage (1.21 mm) anchors per jamb as required for the adjoining wall construction. Provide 18 gage (1.21 mm) floor anchors welded in place for attachment to floor.

E. Provide vandal proof screws on removable stops of borrowed lights and transoms.

F. Reinforce and prepare frames to receive hardware as follows. Refer to Section 08710 for hardware requirements.

1. Hinges: 10 gage (3.42 mm).
2. Concealed hardware: 14 gage (1.90 mm).
3. Surface hardware: 14 gage (1.90 mm).

G. Door Bumpers: Manufacturer's standard resilient type; removable for replacement. Three on single doors except for labeled and weather stripped units. Two on a pair of doors.

H. Fill surface depressions of hollow frames with metallic paste filler and grind to smooth finish. Chemically treat surfaces and apply one coat of primer.

I. Provide 26 gage (0.45 mm) steel plaster guards or mortar boxes, welded to frame, at back of finish hardware cutouts where mortar or other materials might obstruct hardware operation and to close off interior of openings.

2.7 FIRE RATED FABRICATION

A. Fabricate fire rated units of materials in accordance with requirements of NFPA No. 80 and have been tested, listed, and labeled in accordance with ASTM E 152 "Standard Methods of Fire Tests of Door Assemblies" by a nationally recognized independent testing and inspection agency. Provide 18 gage astragals for double doors where required.

2.8 ASSEMBLIES

- A. Frames to be furnished by door supplier and installed by the General Contractor.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install doors, frames and accessories in accordance with shop drawings and manufacturer's data.
- B. Install metal frames plumb and square, in correct locations indicated and with a maximum diagonal distortion of 1/16 inch (1.55 mm). Ensure frames are securely and rigidly anchored to adjacent construction.
- C. Place frames prior to construction of enclosing walls and ceilings. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders.
- D. Place frames in stud partitions with a minimum of three wall anchors per jamb located at hinge and strike levels. Attach to studs with screws.
- E. Anchor frames in masonry partitions with a minimum of three anchors per jamb. Fill jambs solid with grout.
- F. Install hollow metal doors plumb and square, and with a maximum diagonal distortion of 1/16 inch (1.55 mm).
- G. Install hardware in accordance with requirements of Section 08 70 00.
- H. Install glazing in accordance with the requirements of Section 08 81 00.
- I. Place fire rated doors with clearances as specified in NFPA Standard No. 80.
- J. Install lite bead kits flush with surface of hollow metal doors.
- K. Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch up of primer.

END OF SECTION 08 1113

SECTION 08 1400 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the Contract including General and Supplementary Conditions and Division 1–Specification sections, apply to work specified in this Section.

1.2 REFERENCE STANDARDS (most recent edition)

- A. WDMA IS 1A - Window and Door Manufacturers Association (WDMA)
- B. AWI - Quality Standards of the Architectural Woodwork Institute (AWI)
- C. NFPA 80 - Fire Doors and Windows
- D. NFPA 252 - Standard Methods of Fire Tests for Door Assemblies
- E. Underwriters' Laboratories - UL 10B (neutral pressure) and UL 10C (positive pressure) - Fire Tests of Door Assemblies
- F. ITS (Warnock Hersey) - Certification Listings for Fire Doors
- G. ASTM E90-90 - Measurement of Airborne Sound Transmission Loss of Building Partitions

1.3 SUMMARY

This section includes:

- 1. Solid-core flush wood doors with wood-veneer, faces.
- 2. Factory finish flush wood doors.

1.4 SUBMITTALS

- 1. **Product Data:** Submit door manufacturer's product construction data, hardware attachment performance data, specifications and installation instructions for each type of wood door, including details of core and edge construction, trim for lite openings and similar components.
- 2. **Specific Product Warranty:** The door shall be warranted by the manufacturer to be free of manufacturing defects for the life of the original installation. Warranty shall provide for repair or replacement of the door as originally furnished. Manufacturer shall elect to repair or replace defective door(s), and will assume reasonable costs associated with same. Manufacturer may, per its discretion, elect to use either its own or third party resources to resolve warranty claims.
- 3. **Shop Drawings:** Provide the following information:

1. Door type.
 2. Door size.
 3. Fire Rating: Positive pressure - UL 10C/UBC7-2-97.
 4. Hardware types and locations.
 5. Hardware blocking requirements and location.
 6. Vision panel or louver cutout size and location.
 7. Prefinish system type.
4. Samples:
Construction samples. Corner sections with door faces, edges, and core representative of the specified door type(s). Corner samples to be not less than 6" x 6".

1.5 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing products specified in Section with a minimum of five years documented experience. All doors must be supplied through one Company.
- B. Quality Standard: Doors to comply with WDMA IS 1A (Window and Door Manufacturers Association).
- C. Fire Ratings Compliance: Fire-rated wood doors to comply with NFPA-80 requirements according to building code standards having local jurisdiction: Positive Pressure Testing UBC 7-2-97 or UL10C.
- D. Label Certification: All doors requiring fire-rating will carry either UL or ITS (Warnock Hersey) label. Manufacturer's certification labels may be used for door size variations if approved by AHJ (Authority Having Jurisdiction).
- E. Delivery/Storage/Handling: Store and protect doors in accordance with manufacturer's recommendations and WDMA. Following are general guidelines. For more specific information refer to WDMA's Appendix Section "Care and Installation at Job Site."
 - 1) Store doors flat and off the floor on a level surface in a dry, well-ventilated building. Do not store on edge. Protect doors from dirt, water and abuse.
 - 2) Certain wood species are light sensitive. Protect doors from exposure to light (artificial or natural) after delivery.
 - 3) Do not subject interior doors to extremes in either heat or humidity. HVAC systems should be operational and balanced, providing a temperature range of 50 to 90 degrees Fahrenheit and 30% to 50% relative humidity.
 - 4) When handling doors, always lift and carry. Do not drag across other doors or surfaces. Handle with clean hands or gloves.

- 5) Each door will be marked on top rail with opening number.

1.6 WARRANTY

Manufacturer's signed warranty covering manufacturing or material defects for life of original installation, including repair, replacement, machining, detailing and/or prefinishing, is a required part of the manufacturer's warranty for interior doors. Exterior applications per manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

Available manufacturers – subject to compliance with requirements, the following are approved manufacturers offering 5 Ply - Hot Press or 7 Ply- Cold Press wood doors:

Algoma Hardwoods, Inc.
Buell Door Company
Eggers Industries
Graham Manufacturing
Marshfield Door Systems
VT Industries, Inc.

2.2 DOOR CONSTRUCTION, GENERAL

A. Low – emitting materials. Provide doors made with adhesives and composite wood products that do not contain urea formaldehyde.

B. Non-Fire-Rated– Grade Specified: Heavy Duty

1. Construct using WDMA Five (5) Ply construction, using Hot Press method or Seven (7) Ply construction, using Cold Press method for laminating door materials. Stiles and rails must be securely bonded to the core and then abrasively planed prior to veneering.
2. Core: Structural Composite Lumber Core (SCLC-5) is an engineered hardwood composite sometimes referred to as LSL (Laminated Strand Lumber). The material complies with WDMA minimum performance levels for interior applications with screw holding power of 540 lbs., modulus of rupture of 6,500 psi, modulus of elasticity of 1,300,000 psi and density of 38 lbs per cubic foot.
3. Crossbands are wood-based composites of a minimum thickness of 1/16". Crossbands and face veneers are laminated to the core with Type 2 interior use glue using the Hot Press process. Crossbands must extend the full width of the door. Minimum properties include internal bond of 100 psi and density of 50 lbs. per cubic foot.
4. Stiles (Vertical Edges) - Stiles are hardwood, one piece, laminated or veneered. Constructions with laminated edges may use structural composite lumber as an inner stile component. Compatible - Similar in overall color, grain, character and contrast as the face veneer.
5. Rails (Horizontal Edges) - Rails are solid wood, structural composite lumber meeting the minimum requirements of WDMA, or medium density fiberboard meeting requirements of ANSI 208.2 (Medium Density Fiberboard for Interior Use).
6. Veneers -

a) Face Grade Specified: "A"

b) Veneer Species Specified: Red Oak

c) Cut: Rotary

C. Fire-Rated Doors

1) Construct using WDMA Five (5) Ply construction, using Hot Press method or Seven (7) Ply construction, using Cold Press method for laminating door materials.

Fire Rating Specified: 3/4, 1 or 1-1/2 Hour

Category A Positive Pressure openings have all the intumescent required for compliance contained within the door and require no additional installation of intumescent strips.

2) Core is Structural Composite Lumber Core, an engineered hardwood composite sometimes referred to as LSL (Laminated Strand Lumber). The material complies with WDMA minimum performance levels for interior applications with screw holding power of 540 lbs., modulus of rupture of 6,500 psi, modulus of elasticity of 1,300,000 psi and density of 38 lbs per cubic foot. For use only with 1/3 hour rated doors.

3) Crossbands are wood-based composites of a minimum thickness of 1/16". Crossbands and face veneers are laminated to the core with Type 2 interior use glue using the Hot Press process. Crossbands must extend the full width of the door. Minimum properties include internal bond 100 psi and density of 50 lbs. per cubic foot.

4) Stiles (Vertical Edges) - Provide manufacturer's standard laminated edge construction with improved screw-holding capability and split resistance. Both inner and outer stiles cannot contain salt treating.

a) Compatible - Similar in overall color, grain, character and contrast as the face veneer.

5) Rails (Horizontal Edges) - Rails are solid wood or other material contained in manufacturer's fire door approvals.

6) Hardware Blocking Rail Blocking Requirements Specified: Minimum 5" Top and 5 1/2" Bottom Rail.

Lock Blocking Requirements Specified: Lock Blocks Minimum 4 1/2" x 10"

7) Veneers -

a. Face Grade Specified: "A"

b. Veneer Species Specified: Red Oak

c. Cut: Rotary

2.3 DOOR FABRICATION

- A. Factory-prefit and bevel doors (3°) to suit frame sizes indicated, with 3/16" prefit in width, + 0"/-1/32", tolerances. Prefit top of door 1/8" +1/16"/-0", and undercut as designated by floor condition. For fire-rated doors comply with NFPA 80 for prefits and undercuts.
- B. Factory pre-machine doors for hardware that is not surface applied. Locations and hole patterns to comply with specified hardware requirements as per NFPA 80 standards for doors specified; and to maintain door manufacturer's warranty.
 - 1) Specific locations for hardware will be coordinated between frame and door manufacturers.
 - 2) Specific hardware preps will be per hardware schedule(s) provided. Hardware preps to be neatly and cleanly squared as required per hardware templates.
 - 3) Metal astragals and channels to be supplied where fire-ratings will not allow metal-free edge(s).
- C. Factory Preparation for Light Openings and Louvers - Cut and trim openings through doors to comply with NFPA 80 requirements where indicated; and to maintain door manufacturer's warranty.
 - 1) Metal vision panels and louvers supplied primed and/or painted.

2.4 FACTORY FINISHING

A. Finish Location

- 1) Factory Finishing – All doors to be finished at the factory, with UV cured system with performance properties equivalent to TR-6 or OP-6 Catalyzed Polyurethane per AWI Section 1500. Premium grade. Factory pre-finished doors to be individually protected with either transparent or opaque (cherry, mahogany, teak, walnut) poly-wrap at the factory. Finish faces, all four edges, edges of cut-outs, and mortises.
- 2) Transparent Finish
 - a) Grade: Custom
 - b) Finish and Sheen: Match existing

PART 3 - EXECUTION

3.1 Examination

- A. Confirm that frames comply with type, size, location and swing requirements and that they are installed plumb and square.
- B. Inspect doors for any damage, manufacturing defects or prefinish inconsistency, e.g. wrong color or poor finish.
- C. If frames and doors pass inspections (see A and B above), proceed to installation. If there are any issues in either frames or doors, do not proceed to installation. Contact appropriate supplier to correct unsatisfactory conditions, and proceed with installation only after corrections have been made.

3.2 Installation

- A. Installation of wood doors to comply with WDMA IS 1A, specific door manufacturer's specific instructions, and NFPA 80.

3.3 Adjusting and Protecting

A. After installation of door in frame, operate door to ensure that the door swings freely and that all hardware functions correctly. If not, make adjustments as required to provide an operable opening. If required, protect doors following installation from damage that may occur as a result of project completion.

END OF SECTION 08 1400

SECTION 08 33 00 - ROLLING DOORS

PART 1 -GENERAL

1.1 SUMMARY

- A. Section Includes: rolling doors.
 - 1. Exterior at Kitchen delivery location.
 - 2. Interior at Kitchen serving line.
- B. Related Sections:
 - 1. Division 9. Finishes.
 - 2. Division 26. Electrical wiring and conduit, fuses, disconnect switches, connection of operator to power supply, and installation of control station and wiring.
- C. Products Supplied, But Are Not Installed Under This Section:
 - 1. Control Station

1.2 SUBMITTALS

- A. Reference Section 01 33 00 Submittal Procedures; submit the following items:
 - 1. Product Data.
 - 2. Shop Drawings: Include special conditions not detailed in Product Data. Show interface with adjacent work.
 - 3. Quality Assurance/Control Submittals:
 - a. Provide proof of manufacturer ISO 9001:2008 registration.
 - b. Provide proof of manufacturer and installer qualifications - see 1.3 below.
 - c. Provide manufacturer's installation instructions.
 - 4. Closeout Submittals:
 - a. Operation and Maintenance Manual.
 - b. Certificate stating that installed materials comply with this specification.

1.3 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Manufacturer Qualifications: ISO 9001:2008 registered and a minimum of five years experience in producing counter doors of the type specified.
 - 2. Installer Qualifications: Manufacturer's approval.

1.4 DELIVERY STORAGE AND HANDLING

- A. Follow manufacturer's instructions.

1.5 WARRANTY

- A. Standard Warranty: Two years from date of shipment against defects in material and workmanship.

- B. Maintenance: Submit for owner's consideration and acceptance of a maintenance service agreement for installed products.

PART 2 -PRODUCTS

2.1 MANUFACTURER

- A. Basis of Design Manufacturer: The Cookson Company, Inc., 2417 S 50th Avenue, Phoenix, AZ 85063-3880. Telephone: (800) 294-4358, Fax: (866) 448-6798. Underwriters Laboratories, Inc. (UL), ISO 9001:2008 Registered.
- B. Subject to compliance with requirements indicated, provide products by one of the following:
 - 1. Cornell Iron Works
 - 2. Amarr
 - 3. Clopay
- C. Model: CD10-1M SS
- D. Substitutions: Reference Section 01 6300 Product Substitution Procedures.

2.2 MATERIALS

- A. Curtain:
 - 1. Slats: No. 10, interlocked flat-faced slats, 1-1/4 inches (31.8 mm) high by 3/8 inch (9.5 mm) deep, 22 gauge interconnected strip stainless steel slats #4 polish with a bottom bar constructed of tubular stainless steel, 2" (50.8 mm) high by 1-1/4" (31.8 mm) deep, #4 polish.
 - 2. Slat Finish:
 - a. Stainless steel: No. 4 polish.
 - 3. Bottom Bar Finish:
 - a. Stainless steel: No. 4 polish.
- B. Guides:
 - 1. Stainless Steel: Tubular stainless steel #4 angle and channel, 1-7/8" (47.6 mm) square.
- C. Counterbalance Shaft Assembly:
 - 1. Barrel: Steel pipe of not less than 4" in diameter capable of supporting curtain load with maximum deflection of 0.03 inches per foot (2.5 mm per meter) of width.
 - 2. Spring Balance: Oil-tempered torsion spring assembly designed for proper balance of door to ensure that maximum effort to operate will not exceed 30 lbs (133 N). Provide wheel for applying and adjusting spring torque.
- D. Brackets: Fabricate from 1/8" (3.2 mm) thick steel plate.
 - 1. Finish:
 - a. Steel: Factory applied gray baked-on thermosetting powder coat; minimum 2.5 mils (0.065 mm) cured film thickness.
- E. Hood: 24 gauge stainless steel with reinforced top and bottom edges.

1. Finish:
 - a. Stainless steel: #4 polish.

2.3 ACCESSORIES

1. Operator and Bracket Mechanism Cover: Provide 24 gauge stainless steel [to enclose exposed moving operating components] at coil area of unit. Finish to match door hood.

2.4 OPERATION

- A. Supply Cookson Model MG Electric Motor Operator, industrial duty - rated for a maximum of 20 cycles per hour, cULus listed, Totally Enclosed Non-Ventilated gear head operator(s) rated 1/3 hp as recommended by door manufacture for size and type of door, 230 Volts, 3 Phase. Provide complete with electric motor and factory pre-wired motor control terminals, maintenance free solenoid actuated brake, [emergency manual crank hoist]and [provisions for auxiliary push-up operation] and control station(s). Motor shall be high starting torque, industrial type, protected against overload with an auto-reset thermal sensing device. Primary speed reduction shall be heavy-duty, lubricated gears with mechanical braking to hold the door in any position. Operator shall be equipped with an emergency manual crank hoist assembly that safely cuts operator power when engaged. A disconnect chain shall not be required to engage or release the manual crank hoist. Operator drive and door driven sprockets shall be provided with manual crank hoist. Provide an integral Motor Mounted Interlock system to prevent damage to door and operator when mechanical door locking devices are provided. Operator shall be capable of driving the door at a speed of 6 to 9 inches per second (15 to 23 cm/sec). Fully adjustable, driven linear screw type cam limit switch mechanism shall synchronize the operator with the door. The electrical contractor shall mount the control station(s) and supply the appropriate disconnect switch, all conduit and wiring per the overhead door wiring instructions.

1. Control Station: Surface mounted, "Open/Close/Stop" push buttons; NEMA 1.

- B. Provide operator to function with constant pressure close operation to meet UL325-2010 listing standard requirements.

PART 3 -EXECUTION

3.1 EXAMINATION

- A. Examine substrates upon which work will be installed and verify conditions are in accordance with approved shop drawings.
- B. Coordinate with responsible entity to perform corrective work on unsatisfactory substrates.
- C. Commencement of work by installer is acceptance of substrate.

3.2 INSTALLATION

- A. General: Install door and operating equipment with necessary hardware, anchors, inserts, hangers and supports.
- B. Follow manufacturer's installation instructions.

3.3 ADJUSTING

- A. Following completion of installation, including related work by others, lubricate, test, and adjust doors for ease of operation, free from warp, twist, or distortion.

3.4 CLEANING

- A. Clean surfaces soiled by work as recommended by manufacturer.
- B. Remove surplus materials and debris from the site.

3.5 DEMONSTRATION

- A. Demonstrate proper operation to Owner's Representative.
- B. Instruct Owner's Representative in maintenance procedures.

END OF SECTION 08 3300

SECTION 08 41 13 – ALUMINUM-FRAMED ENTRANCE AND STOREFRONT

PART 1 -GENERAL

1.1 SUMMARY

- A. Related Documents: Conditions of the Contract, Division 1 – General Requirements, and Drawings apply to Work of this Section.
- B. Section Includes:
 - 1. Storefront framing, complete with reinforcing, fasteners, anchors, and attachment devices.
 - 2. Storefront doors, complete with reinforcing for hardware requirements.
 - 3. Accessories necessary to complete the work.
- C. Related Sections:
 - 1. Section 01 40 00 – Quality Requirements
 - 2. Section 05 50 00 – Metal Fabrications.
 - 3. Section 07 92 00 – Joint Sealants
 - 4. Section 08 71 00 – Finish Hardware
 - 5. Section 08 81 00 – Solar Control Coated Glass
 - 6. Section 08 8100.13 – Interior Glass Glazing
 - 7. Section 08 8113 – Decorative Glass Glazing

1.2 REFERENCES

- A. Aluminum Association (AA):
 - 1. DAF-45 Designation System for Aluminum Finishes.
- B. American Architectural Manufacturers Association (AAMA):
 - 1. 501 Methods of Test for Exterior Walls.
 - 2. 501.2 Quality Assurance and Diagnostic Water Leakage Field Check of installed Storefront, Curtain Walls, and Sloped Glazing Systems.
 - 3. 611 Voluntary Specification for Anodized Architectural Aluminum
 - 4. 701 Voluntary Specifications for Pile Weather-stripping and Replaceable Fenestration Weather seals.
 - 5. 1503 Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.
 - 6. CW-10 Care and handling of Architectural Aluminum from Shop to Site.
 - 7. SFM-1 Aluminum Storefront and Entrance Manual.
- C. American Society for Testing and Materials (ASTM)
 - 1. B209 Aluminum and Aluminum – Alloy Sheet and Plate
 - 2. B221 Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes
 - 3. E283 Test Method for Rate of Air Leakage through Exterior Windows, Curtain Walls and Doors.
 - 4. E330 Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.

5. E331 Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.

D. Glass Association of North America (GANA):

1. Glazing Manual.

1.3 SYSTEM REQUIREMENTS

A. Design Requirements

1. Provide aluminum entrance and storefront systems capable of withstanding loads and thermal and structural movement requirements indicated without failure, based on testing manufacturer's standard units in assemblies similar to those indicated for this project. Failure includes the following:
 - a. Air infiltration and water penetration exceeding specified limits.
 - b. Framing members transferring stresses, including those caused by thermal and structural movement, to glazing units.
2. Drawings are diagrammatic and do not purport to identify nor solve problems of thermal or structural movement, glazing, anchorage, or moisture disposal.
3. Requirements shown by details are intended to establish basic dimension of units, sight lines and profiles of members.
4. Provide concealed fastening whenever possible.
5. Provide entrance and storefront systems, including necessary modifications, to meet specified requirements and maintaining visual design concepts.
6. Attachment considerations are to take into account site peculiarities and expansion and contraction movements so there is no possibility of loosening, weakening, or fracturing connection between units and building structure or between units themselves.
7. Anchors, fasteners and braces shall be structurally stressed not more than 50% of allowable stress when maximum loads are applied.
8. Provide for expansion and contraction due to structural movement without detriment to appearance or performance.
9. Framing systems shall accommodate expansion and contraction movement due to surface temperature differentials of 180 degrees F without causing buckling, stress on glass, failure of joint seals, excessive stress on structural elements, reduction of performance, or other detrimental effects.

B. Performance Requirements:

1. Wind loads: provide framing systems, including anchorage, capable of withstanding wind-load design pressures calculated according to requirements of authorities having jurisdiction or the American Society of Civil Engineers' ASCE 7, "Minimum Design Loads for Buildings and Other Structures," 6.4.2, "Analytical Procedure," whichever are more stringent.
2. Air infiltration: Air leakage through fixed light areas of storefront shall not exceed 0.06 cfm per square foot of surface area when tested in accordance with ASTM E283 at differential static pressure of 6.24 psf.
3. Water infiltration: No uncontrolled leakage when tested in accordance with ASTM E331 at test pressure of 8 psf as defined in AAMA 501.

4. Static-Pressure Test Performance: Provide entrance and storefront systems that do not evidence material failures, structural distress, failure of operating components to function normally, or permanent deformation of main framing members exceeding 0.2 percent of clear span when tested according to ASTM E330.
 5. Seismic Loads: Provide entrance and storefront systems, including anchorage, capable of withstanding the effects of earthquake motions calculated according to requirements of authorities having jurisdiction or ASCE 7, "Minimum Design Loads for Building and Other Structures," and "Earthquake Loads," whichever are more stringent.
 6. Dead Loads: Provide entrance and storefront system members that do not deflect an amount which will reduce glazing bite below 75 percent of design dimension when carrying full dead load.
 - a. Provide a minimum 1/8 inch clearance between members and top of glazing or other fixed part immediately below.
 - b. Provide a minimum 1/16 inch clearance between members and doors.
 7. Deflection: Maximum calculated deflection of any framing member in direction normal to plane of wall when subjected to specified design pressures for spans up to and including 13'-6" shall be limited to $[1/175]$ of its clear span and for spans greater than 13'-6" deflection shall be limited to $[1/240]$ of its clear span + 1/4", except that maximum deflection of members supporting plaster surfaces shall not exceed 1/360 of its span.
 8. Average Thermal Conductance: Provide storefront systems with average U-values of not more than 0.63 Btu/sq. ft. x h x deg F when tested according to AAMA 1503.1.
 9. Condensation Resistance (CRF): When tested to AAMA Specification 1503, the condensation resistance factor shall not be less than 45.
- C. Testing Requirements: provide components that have been previously tested by an independent testing laboratory.

1.4 SUBMITTALS

- A. General: Submit in accordance with Section 01 3300 – Submittal Procedures.
- B. Product Data:
 1. Submit manufacturer's descriptive literature and product specifications.
 2. Include information for factory finishes, hardware, accessories, and other required components.
 3. Include color charts for finish indicating manufacturer's standard colors available for selection.
- C. Shop Drawings:
 1. Submit shop drawings covering fabrication, installation, and finish of specified systems.
 2. Include following:
 - a. Fully dimensioned elevation drawing with details coordination keys.
 - b. Locations of exposed fasteners and joints.
 3. Provide detailed drawings of:
 - a. Composite members.

- b. Joint connections for framing systems and for entrance doors.
 - c. Anchorage.
 - d. System reinforcements
 - e. System expansion and contraction provisions.
 - f. Glazing methods and accessories.
 - g. Internal sealant requirements.
 - h. Thermal improvements.
4. Schedule of finishes
- D. Samples:
- 1. Submit manufacturer's standard samples indicating quality of finish.
 - 2. Where normal texture or color variations are expected, include additional samples illustrating range of variation.
- E. Test Reports:
- 1. Standard systems: Submit certified copies of previous test reports substantiating performance of system in lieu of retesting. Include other supportive data as necessary.
- F. Qualification Data:
- 1. Submit certification from storefront manufacturer verifying installer's qualifications, and verifying that installer has the required five years minimum experience installing aluminum-framed entrance and storefront systems.
- G. Manufacturer's instructions: Submit manufacturer's printed installation instructions.
- H. Sealant Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating that the materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with sealants; include joint sealant manufacturer's written interpretation of test results relative to sealant performance and recommendations for primers and substrate preparation needed to obtain adhesion

1.5 QUALITY ASSURANCE

- A. Single Source Responsibility:
- 1. To ensure quality of appearance and performance, obtain materials for systems from either a single manufacturer or from manufacturer approved by systems manufacturer.
- B. Installer Qualifications: Certified in writing by system manufacturer as qualified for installation of specified systems.
- 1. Engineering Responsibility: Installer shall assume engineering responsibility and shall prepare data for entrance and storefront systems, including shop drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this project.
- C. Perform work in accordance with AAMA SFM-1 and manufacturer's written instructions.
- D. Manufacturer's representatives shall inspect final installation and provide a written report of acceptance to be included with storefront installer's closeout documents.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of Sections 01 60 00 – Product Requirements
- B. Protect finished surfaces as necessary to prevent damage.
- C. Do not use adhesive papers or sprayed coatings that become firmly bonded when exposed to sun.
- D. Do not leave coating residue on any surfaces.
- E. Replace damaged units.

1.7 WARRANTY

- A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract.
- B. Provide written warranties in form acceptable to Owner signed by manufacturer, installer and General Contractor, as follows:
 - 1. Manufacturer's Warranty shall cover the following:
 - a. Structural failures including, but not limited to, excessive deflection.
 - b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - c. Defective materials, defective manufacture, or glass breakage due to defective design.
 - d. Failure of operating components to function normally.
 - e. Agreement to replace components which fail within 2 years from date of Substantial Completion.
 - 2. Installer's Warranty shall cover the following:
 - a. All items listed above under Manufacturer's Warranty.
 - b. Water leakage through fixed glazing and frame areas.
 - c. Defective installation workmanship, or glass breakage due to defective installation.
 - 3. General Contractor's Warranty shall cover the following:
 - a. Items a) through d) listed above under Manufacturer's Warranty.
 - b. Items f) through h) listed above under Installer's Warranty.
 - c. Agreement to provide materials and labor for replacement of defective components that fail within 1 year from date of Substantial Completion.
- C. Warranty response time: The aluminum storefront installer shall respond to requests for warranty repairs within 24 hours of receiving notice that such repairs are required.

PART 2 -PRODUCTS

2.1 MANUFACTURERS AND PRODUCTS

- A. Subject to compliance with requirements indicated, provide products by one of the following:
 - 1. Oldcastle Architectural Products.
 - 2. Kawneer Company.

3. Tubelite, Inc.
- B. No Substitutions.
- C. Acceptable storefront framing system for exterior use: (2" x 4 1/2" center glazed storefront):
1. Oldcastle Series 3000 Thermal Multiplane.
 2. Kawneer VG451T.
 3. Tubelite T14000
- D. Acceptable storefront framing system for interior use: (1-3/4" x 4-1/2" center glazed storefront) (Interior storefront doors and framing systems shall have the same gage aluminum and same structural construction as the exterior systems.):
1. Oldcastle Series 2000 framing.
 2. Kawneer Trifab 450.
 3. Tubelite E4500 series.
- E. Acceptable entrance door systems:
1. Door construction: 2-inch overall thickness with minimum .188 inch thick extruded aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
 2. Door design: Shall be Wide Stile with smooth surface, minimum 10" high, bottom rails and at least one intermediate mid-panel. Mid-panel height to be coordinated with hardware requirements, specifically to be centered on exit devices, regardless of the dimensions shown on the drawings. Doors with full glass lites are not acceptable. Door height to be no taller than 7'-0".
 3. Door labeling: Doors shall have permanent labels on the hinge edge surface identifying the door manufacturer.
 4. Glazing stops and gaskets: Shall be snap-on, extruded aluminum stops and preformed gaskets. Provide non-removable glass stop to exterior of door.
 5. Door stops: Shall be one piece (not broken at hardware latch keeper). Shall be mechanically anchored, (not snap on).
 6. Reinforcing and Anchoring: Doors and door frames are to be properly reinforced with 1/8" min. thickness internal steel back up material sufficient for attaching hardware as specified. In addition to steel reinforcing, door frame extrusion to also have thickened aluminum walls for hardware attachment. Types of hardware include, but are not limited to: surface mounted door closers, handicap operators, hold open arms, lock or latch strikes, removable mullions, hinges or pivots, and any other hardware as called out in the finish hardware section of the specifications. Hardware must be anchored to the main sections of the storefront door or door frame and no hardware will be anchored into any snap-on extrusion.
 7. Door frames: Only aluminum, wood, or fiberglass doors are to be installed in aluminum door frames. Do not install hollow metal doors in aluminum door frames.

2.2 FRAMING MATERIALS AND ACCESSORIES

A. Aluminum:

1. ASTM B221, alloy 6063-T5 for extrusions; ASTM B209, alloy 5005-H16 for sheets; or other alloys and temper recommend by manufacturer appropriate for specified finish.

B. Internal Reinforcing:

1. ASTM A36 for carbon steel.
2. Shapes and sizes to suit installation.
3. Steel components factory coated with alkyd type zinc chromate primer complying with FS TT-P-645.

C. Anchorage Devices:

1. Manufacturer's standard formed or fabricated steel or aluminum assemblies of shapes, plates, bars or tubes.
2. Hot-dip galvanized steel assemblies after fabrication; comply with ASTM A123, 2.0 ounce minimum coating.

D. Fasteners:

1. Aluminum, non-magnetic stainless steel or other non-corrosive materials compatible with items being fastened.
2. Provide concealed fasteners wherever possible.
3. For exposed locations, provide Phillips flathead screws with finish matching item fastened.
4. For concealed locations, provide manufacturer's standard fasteners.

E. Expansion Anchor Devices: lead-shield or toothed-steel, drilled-in, expansion bolt anchors.

F. Protective Coatings: Cold-applied asphalt mastic complying with SSPC, compounded for 30 mil thickness for each coat; or alkyd type zinc chromate primer complying with FS TT-P-645

G. Touch-Up primer for galvanized components: zinc oxide conforming with FS TT-P-641

H. Glazing Gaskets:

1. Compression type design, replaceable, molded or extruded, of neoprene, polyvinyl chloride (PVC), or ethylene propylene diene monomer (EPDM).
2. Profile and hardness as required to maintain uniform pressure for watertight seal.

I. Weatherproofing:

1. Wool pile conforming to AAMA 701.2.

J. Internal Sealants and Baffles.

K. Adhesives and Sealants: Provide adhesives and sealants inside the weatherproofing system containing VOC content of 250g/L, or less when calculated according to 40CFR 59, Subpart D (EPA Method 24).

2.3 GLASS AND GLAZING

A. Refer to Sections:

1. 08 8100 – Solar Control Coated Glass.
2. 08 8100.13 Interior Glass Glazing

2.4 FABRICATION

A. Coordination of Fabrication

1. Check actual frame or door openings required in construction work by accurate field measurements before fabrications.
2. Fabricate units to withstand loads that will be applied when system is in place.

B. General

1. Conceal fasteners wherever possible.
2. Reinforce work as necessary for performance requirements, and for support to structure.
3. Separate dissimilar metals and aluminum in contact with concrete utilizing protective coating or preformed separators, which will prevent contact and corrosion.
4. Comply with Section 08 81 00 – Glass Glazing, for glazing requirements.

C. Aluminum Framing

1. Provide members of size, shape and profile indicated, designed to provide for glazing from the exterior at the first level or ground floor level. Glaze system from the interior at any locations above the first level.
2. Provide manufacturer's standard thermal break between exterior and interior aluminum surfaces.
3. Fabricate frame assemblies with joints straight and tight fitting. Doors and door frames are to be shop fabricated. Field fabrication of frames will not be allowed.
4. Reinforce internally with structural members as necessary to support design loads.
5. Maintain accurate relation of planes and angles, with hairline fit of contacting members.
6. Seal horizontals and direct moisture accumulation to exterior.
7. Provide flashings and other materials used internally or externally that are corrosive resistant, not-straining, non-bleeding and compatible with adjoining materials.
8. Provide manufacturer's extrusions and accessories to accommodate expansion and contraction due to temperature changes without detrimental to appearance or performance.
9. Provide storefront manufacturer's standard high performance extruded sill flashing at all storefront framing.
10. Fabricate door frames to accept specified hardware without compromising the weather seal around doors.

D. Welding

1. Comply with recommendations of the American Welding Society.
2. Use recommended electrodes and method to avoid distortion and discoloration.
3. Grind exposed welds smooth and flush with adjacent surfaces; restore mechanical finish.

- E. Flashings: Form from sheet aluminum with same finish as extruded sections, unless otherwise noted. Apply finish after fabrication. Material thickness as required to suit condition without deflection or "oil-canning".

2.5 FINISHES

A. Bronze Anodized:

1. Conforming to AA-M12C22A31 and AAMA 611.
2. Architectural Class II, etched, medium matte, bronze anodic coating, 0.4 mil minimum thickness

PART 3 -EXECUTION

3.1 EXAMINATION

- A. Examine conditions and proceed with Work in accordance with Section 01 40 00 – Quality Requirements.

3.2 INSTALLATION

- A. General: Comply with manufacturer’s written instructions for protecting, handling, and installing entrance and storefront systems. Do not install damaged components. Fit frame joints to produce hairline joints free of burrs and distortion. Rigidly secure non-movement joints. Seal joints watertight.
- B. Erection Tolerances:
 - 1. Limit variations from plumb and level:
 - a. 1/8 inch in 10’-0” vertically.
 - b. 1/8 inch in 20’-0” horizontally.
 - 2. Limit variations from theoretical locations; 1/4 inch for any member at any location.
 - 3. Limit offsets in theoretical end-to-end and edge-to-edge alignment: 1/16 inch from flush surfaces not more than 2 inches apart or out-of-flush by more than 1/4 inch.
- C. Install doors and hardware in accordance with manufacturer’s printed instructions.
- D. Set units plum, level and true to line, without warp or rack of frame.
- E. Anchor securely in place, allowing for required movement, including expansion and contraction.
- F. Separate dissimilar materials at contact points, including metal in contact with masonry or concrete surfaces, with bituminous paint or preformed separators to prevent contact with masonry of concrete.
- G. Set sill members in bed of sealant. Set other members with internal sealants and baffles to provide weather-tight construction.
- H. Coordinate installation of perimeter sealant and backing materials between assemblies and adjacent construction in accordance with requirements of Section 07 92 00 – Joint Sealants.
- I. Glazing: refer to requirements of Section 08 81 00 – Glass Glazing.

3.3 ADJUSTING

- A. Test door operating function. Adjust closing and latching speeds and other hardware in accordance with manufacturer’s instructions to ensure smooth operation.

3.4 CLEANING

- A. Clean surfaces in compliance with manufacturer’s recommendations; remove excess mastic, mastic smears, foreign materials and other unsightly marks.
- B. Clean metal surfaces exercising care to avoid damage.

3.5 PROTECTION

- A. Provide final protection and maintain conditions, acceptable to manufacturer and installer, that ensure entrance and storefront systems are without damage or deterioration at Substantial Completion.

END OF SECTION 08 4113

SECTION 08 45 23 - INSULATED TRANSLUCENT SANDWICH PANEL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes the insulated translucent sandwich panel system as shown and specified. Work includes providing and installing:
 - 1. Flat factory prefabricated structural insulated translucent sandwich panels.
 - 2. Aluminum installation system.
 - 3. Aluminum sill flashing.

- B. Related Sections:
 - 1. Structural Steel/Concrete/Rough Carpentry
 - 2. N/A
 - 3. Flashing & Sheet Metal: Section 07 6200
 - 4. Sealants: Section 07 9200
 - 5. Glazing: Section 08 8100

1.2 SUBMITTALS

- A. Submit manufacturer's product data. Include construction details, material descriptions, profiles and finishes of components.

- B. Submit shop drawings. Include elevations, details, dimensions and attachments to other work.

- C. Submit manufacturer's color charts showing the full range of colors available for factory finished aluminum.
 - 1. When requested, submit samples for each exposed finish required, in same thickness and material indicated for the work and in size indicated below. If finishes involve normal color variations, include sample sets consisting of two or more units showing the full range of variations expected.
 - a. Sandwich panels: 14" x 28" units
 - b. Factory finished aluminum: 5" long sections

- D. Submit Installer Certificate, signed by installer, certifying compliance with project qualification requirements.

- E. Submit product test reports from a qualified independent testing agency indicating each type and class of panel system complies with the project performance requirements, based on comprehensive testing of current products. Previously completed test reports will be acceptable if for current manufacturer and indicative of products used on this project.

1. Test reports required are:
 - a. Flame Spread and Smoke Developed (UL 723) – Submit UL Card
 - b. Burn Extent (ASTM D-635)
 - c. Color Difference (ASTM D-2244)
 - d. Abrasion/Erosion Resistance (ASTM D-4060)
 - e. Impact Strength (UL 972)
 - f. Bond Tensile Strength (ASTM C-297 after aging by ASTM D-1037)
 - g. Bond Shear Strength (ASTM D-1002)
 - h. Beam Bending Strength (ASTM E-72)
 - i. Insulation U-Factor (NFRC-100)
 - j. NFRC System Certification
 - k. Condensation Resistance Factor (AAMA 1503)
 - l. Class 1 Fire Approval (FM 4881) (Optional)
 - m. Blast Analysis and Testing of Translucent Sandwich Panels Demonstrating Equivalent Performance to 1/4" Laminated Glass per DoD UFC 4-010-01

- F. Submit current documentation indicating regular, independent quality control monitoring under a nationally recognized building code review and listing program.

1.3 QUALITY ASSURANCE

A. Manufacturer's Qualifications

1. Material and products shall be manufactured by a company continuously and regularly employed in the manufacture of specified materials for a period of at least ten (10) consecutive years and which can show evidence of those materials being satisfactorily used on at least six (6) projects of similar size, scope and location. At least three (3) of the projects shall have been in successful use for ten (10) years or longer.
 2. Panel system must be listed by the International Code Council – Evaluation Service (ICC-ES) which requires quality control inspections and fire, structural and water infiltration testing of sandwich panel systems by an approved agency.
 3. Quality control inspections and required testing shall be conducted at least once each year and shall include manufacturing facilities, sandwich panel components and production sandwich panels for conformance with “Acceptance Criteria for Sandwich Panels” as regulated by the ICC-ES.
- B. Installer’s Qualifications: Installation shall be by an experienced installer, which has been in the business of installing specified panel systems for at least five (5) consecutive years and can show evidence of satisfactory completion of projects of similar size, scope and type.
- C. Performance Requirements: The manufacturer shall be responsible for the configuration and fabrication of the complete panel system.

1. When requested, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 DELIVERY STORAGE AND HANDLING

- A. Deliver panel system, components and materials in manufacturer's standard protective packaging.
- B. Store panels on the long edge, several inches above the ground, blocked and under cover in accordance with manufacturer's storage and handling instructions.

1.5 WARRANTY

- A. Submit manufacturer's and installer's written warranty agreeing to repair or replace panel system work which fails in materials or workmanship within two (2) years of the date of delivery. Failure of materials or workmanship shall include leakage, excessive deflection, deterioration of finish on metal in excess of normal weathering and defects in accessories, insulated translucent sandwich panels and other components of the work.

PART 2 - PRODUCTS

2.1 MANUFACTURER

Basis of design:

- A. Kalwall Corporation, tel: (800) 258-9777 – fax: (603) 627-7905 – email: info@kalwall.com

2.2 PANEL COMPONENTS

A. Face Sheets

1. Translucent faces: Manufactured from glass fiber reinforced thermoset resins, formulated specifically for architectural use.
 - a. Thermoplastic (e.g. polycarbonate, acrylic) faces are not acceptable.
2. Flammability of interior face sheets:
 - a. Flamespread: Underwriters Laboratories (UL) listed, which requires periodic unannounced retesting, with flamespread rating no greater than 50 (20) and smoke developed no greater than 250 (200) when tested in accordance with UL 723.
 - b. Burn extent by ASTM D-635 shall be no greater than 1”.
 - c. Face sheets shall not deform, deflect or drip when subjected to fire or flame.
 - d. Face sheets shall not delaminate when exposed to 200°F for 30 minutes per IBC and NBC (300°F for 25 minutes per UBC and SBC).
3. Weatherability of exterior face sheets:
 - a. Color stability: Full thickness of the exterior face sheet shall not change color more than 3.0 CIE Units DELTA E by ASTM D-2244 after 5 years outdoor South Florida weathering at 5 degrees facing south, determined by the average of at least three (3) white samples with and

without a protective film or coating to ensure long-term color stability. Color stability shall be unaffected by abrasion or scratching.

- b. Erosion barrier: Exterior face shall have a permanent glass erosion barrier embedded beneath the surface to provide long-term resistance to reinforcing fiber exposure. Exterior face surface loss shall not exceed .7 mils and 40 mgs when tested in accordance with ASTM D-4060 employing CS17 abrasive wheels at a head load of 500 grams for 1000 cycles. Sacrificial surface films or coatings are not acceptable erosion barriers.
4. Appearance:
 - a. Exterior face sheets: Smooth, 0.070” thick and crystal in color.
 - b. Interior face sheets: Smooth, 0.045” thick and white in color.
 - c. Face sheets shall not vary more than +/- 10% in thickness and be uniform in color.
 5. Strength: Exterior face sheet shall be uniform in strength, impenetrable by handheld pencil and repel an impact equal to 70 (230) ft. lbs. without fracture or tear when impacted by a 3-1/4” diameter, 5 lb. free-falling ball per UL 972.
- B. Grid Core
1. Thermally broken (aluminum) I-beam grid core shall be of 6063-T6 or 6005-T5 alloy and temper with provisions for mechanical interlocking of muntin-mullion and perimeter. Width of I-beam shall be no less than 7/16”. The I-beam grid shall be machined to tolerances of not greater than +/- .002”.
 2. Thermal break: Minimum 1”.
- C. Laminate Adhesive
1. Heat and pressure resin type adhesive engineered for structural sandwich panel use, with minimum 25-years field use. Adhesive shall pass testing requirements specified by the International Code Council “Acceptance Criteria for Sandwich Panel Adhesives.”
 2. Minimum tensile strength of 750 PSI when the panel assembly is tested by ASTM C-297 after two (2) exposures to six (6) cycles each of the aging conditions prescribed by ASTM D-1037.
 3. Minimum shear strength of the panel adhesive by ASTM D-1002 after exposure to five (5) separate conditions:
 - a. 50% Relative Humidity at 73° F: 540 PSI
 - b. 182° F: 100 PSI
 - c. Accelerated Aging by ASTM D-1037 at room temperature: 800 PSI
 - d. Accelerated Aging by ASTM D-1037 at 182° F: 250 PSI
 - e. 500 Hour Oxygen Bomb by ASTM D-572: 1400 PSI

2.3 PANEL CONSTRUCTION

- A. Provide sandwich panels of flat fiberglass reinforced translucent face sheets laminated to a grid core of mechanically interlocking thermally broken (aluminum) I-beams. The adhesive bonding line shall be straight, cover the entire width of the I-beam and have a neat sharp edge.

1. Thickness: 2-3/4"
 2. Light transmission: 12%.
 3. Solar heat gain coefficient: 0.17%.
 4. U-factor by NFRC certified laboratory: 0.22.
 - a. Complete insulated panel system shall have NFRC certified U-factor of 0.29.
 5. Grid pattern: As shown on drawings.
- B. Panels shall deflect no more than 1.9" at 30 psf in 10'-0" span without a supporting frame by ASTM E-72.
- C. Panels shall withstand 1200°F fire for minimum one (1) hour without collapse or exterior flaming.
- D. Thermally broken panels:
1. Minimum Condensation Resistance Factor of 80 by AAMA 1503 measured on the bond line.
 2. Minimum CRF of 90 at center of grid cell.
- E. Panel system shall be a Factory Mutual (FM) tested and approved Class 1 wall system in accordance with FM 4881.

2.4 BATTENS AND PERIMETER CLOSURE SYSTEM

- A. Closure system: Extruded aluminum 6063-T6 and 6063-T5 alloy and temper clamp-tite screw type closure system.

Perimeter system shall be factory prefabricated "Superbreak" as shown on drawings.

- B. Sealing tape: Manufacturer's standard, pre-applied to closure system at the factory under controlled conditions.
- C. Fasteners: 300 series stainless steel screws for aluminum closures, excluding final fasteners to the building.
- D. Finish: Exposed aluminum to be manufacturer's factory applied finish that meets the performance requirements of AAMA 2604. (Mill)
1. Color selected from manufacturer's standard colors.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, supporting structure and installation conditions.
Do not proceed with panel erection until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Metal Protection:

1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint or method recommended by manufacturer.
3. Where aluminum will contact pressure-treated wood, separate dissimilar materials by methods recommended by manufacturer.

3.3 INSTALLATION

A. Install the panel system in accordance with the manufacturer's installation recommendations and approved shop drawings.

1. Anchor component parts securely in place by permanent mechanical attachment system.
2. Accommodate thermal and mechanical movements.
3. Set perimeter framing in a full bed of sealant compound, or with joint fillers or gaskets to provide weather-tight construction.

B. Install joint sealants at perimeter joints and within the panel system in accordance with manufacturer's installation instructions.

3.4 CLEANING

A. Clean the panel system inside and outside, immediately after installation, according to manufacturer's written recommendations.

END OF SECTION 08 4523

SECTION 08 71 00 – DOOR HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes: Mechanical and electrified door hardware
- B. Related Sections:
 - 1. Division 01 Section “Alternates” for alternates affecting this section.
 - 2. Division 06 Section “Rough Carpentry”
 - 3. Division 06 Section “Finish Carpentry”
 - 4. Division 08 sections for doors and frames with hardware specified in this section.
 - 5. Division 26 “Electrical” sections for connections to electrical power system and for low-voltage wiring.
 - 6. Division 28 “Electronic Safety and Security” sections for coordination with other components of electronic access control system and fire alarm system.

1.02 REFERENCES

- A. UL, LLC
 - 1. UL 10B - Fire Test of Door Assemblies
 - 2. UL 10C - Positive Pressure Test of Fire Door Assemblies
 - 3. UL 1784 - Air Leakage Tests of Door Assemblies
 - 4. UL 305 - Panic Hardware
- B. DHI - Door and Hardware Institute
 - 1. Sequence and Format for the Hardware Schedule
 - 2. Recommended Locations for Builders Hardware
 - 3. Keying Systems and Nomenclature
 - 4. Installation Guide for Doors and Hardware
- C. NFPA – National Fire Protection Association
 - 1. NFPA 70 – National Electric Code
 - 2. NFPA 80 – 2016 Edition – Standard for Fire Doors and Other Opening Protectives
 - 3. NFPA 101 – Life Safety Code
 - 4. NFPA 105 – Smoke and Draft Control Door Assemblies
 - 5. NFPA 252 – Fire Tests of Door Assemblies
- D. ANSI - American National Standards Institute
 - 1. ANSI A117.1 – 2017 Edition – Accessible and Usable Buildings and Facilities
 - 2. ANSI/BHMA A156.1 - A156.29, and ANSI/BHMA A156.31 - Standards for Hardware and Specialties
 - 3. ANSI/BHMA A156.28 - Recommended Practices for Keying Systems
 - 4. ANSI/WDMA I.S. 1A - Interior Architectural Wood Flush Doors
 - 5. ANSI/SDI A250.8 - Standard Steel Doors and Frames

1.03 SUBMITTALS

- A. Submit in accordance with Conditions of Contract and Division 01 Submittal Procedures.
 - 1. Product Data: Submit technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
 - 2. Riser and Wiring Diagrams: After final approval of hardware schedule, submit details of electrified door hardware, indicating:
 - 3. Door Hardware Schedule: Submit with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule published by DHI. Indicate complete designations of each item required for each door or opening, include all notes and operational descriptions from hardware groups.
 - 4. Key Schedule: After Keying Conference, provide keying schedule that includes levels of keying, explanations of key system's function, key symbols used, and door numbers controlled. Use ANSI/BHMA A156.28 "Recommended Practices for Keying Systems" as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
 - 5. Templates: After final approval of hardware schedule, provide for doors, frames and other work specified to be factory or shop prepared for door hardware installation.

1.04 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Supplier: Recognized architectural hardware supplier with record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project.
 - 2. Installer: Qualified tradesperson skilled in the application of commercial grade hardware with experience installing door hardware similar in quantity, type, and quality as indicated for this Project.
- B. Certifications:
 - 1. Fire-Rated Door Openings: Provide door hardware for fire-rated openings that complies with NFPA 80, UL 10C, and requirements of authorities having jurisdiction.
 - 2. Smoke and Draft Control Door Assemblies: Provide door hardware that meets requirements of assemblies tested according to UL 1784 and NFPA 105.
 - 3. Accessibility Requirements: This project must comply with all Federal Americans with Disability Act regulations and all Local Accessibility Regulations.
- C. Pre-Installation Meetings
 - 1. Keying Conference: Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site. Promptly replace products damaged during shipping. Deliver keys to manufacturer of key control system for subsequent delivery to Owner
- B. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work. Protect products against malfunction due to paint,

solvent, cleanser, or any chemical agent. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.

1.06 COORDINATION

- A. Installation Templates: Distribute for doors, frames, and other work specified to be factory or shop prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Provide products from manufacturers listed in hardware groups. Additional alternate products require prior written approval from Owner and are contingent upon those products providing all functions, features, and meeting all requirements of scheduled manufacturer's product.

2.02 MATERIALS

- A. Provide hardware with options specified in the hardware sets, fasteners provided by hardware manufacturer, strikes provided by hardware manufacturer, drop plates, special templates, and other devices necessary for proper hardware installation.
- B. Provide necessary fillers, Dutchmen, reinforcements, and fasteners, compatible with existing materials, as required for mounting new opening hardware and to cover existing door and frame preparations. When modifying existing fire-rated openings, provide materials permitted by NFPA 80 as required to maintain fire-rating.

2.03 HINGES: IVES 5BB SERIES

- A. Provide 5-knuckle plain bearing hinges conforming to ANSI/BHMA A156.1. Provide hinges in the size, quantity, weight, and base metal according to manufacturer's published recommendations. Provide non-removable pins at out-swinging lockable doors. Adjust hinge width as required for door, frame, and wall conditions to allow proper degree of opening.
 - 1. Acceptable Substitutes: Hager BB Series, Stanley FBB Series

2.04 CONTINUOUS HINGES: IVES

- A. Provide aluminum geared continuous hinges conforming to ANSI/BHMA A156.26, Grade 1 and fabricated from 6063-T6 aluminum. Size hinges 1 inch (25 mm) shorter in length than nominal height of door, unless otherwise noted or door details require shorter length.
 - 1. Acceptable Substitutes: Select, Roton

2.05 ELECTRIC POWER TRANSFER: VON DUPRIN EPT-10 SERIES

- A. Provide with number and gage of wires enough to accommodate electric function of specified hardware. Locate per manufacturer's template and UL requirements, unless interference with operation of door or other hardware items.
 - 1. Acceptable Substitutes: ABH PT1000, Securitron CEPT-10

2.06 FLUSH BOLTS: IVES

- A. Provide 12 inch (305 mm) steel or brass rods at doors up to 90 inches (2286 mm) in height. For doors over 90 inches (2286 mm) in height increase top rods by 6 inches (152 mm) for each additional 6 inches (152 mm) of door height. Provide dust-proof strikes at each bottom flush bolt.
 - 1. Acceptable Substitutes: Burns, Rockwood

2.07 CYLINDRICAL LOCKS: BEST 9K SERIES

- A. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 1, and UL Listed for 3-hour fire doors. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
 - 1. Acceptable Substitutes: None – Owner's Standard

2.08 EXIT DEVICES: VON DUPRIN 99/33A SERIES

- A. Provide grooved touchpad exit devices tested to ANSI/BHMA A156.3 Grade 1 and UL listed for Panic Exit or Fire Exit Hardware. Touchpad must extend a minimum of one half of door width. Provide exit devices cut to door width and height with flush end caps. Install exit devices at height recommended by exit device manufacturer, allowable by governing building codes, and approved by Architect. Mount mechanism case flush on face of doors or provide spacers to fill gaps behind devices. Provide exit devices with optional trim designs to match other lever and pull designs used on the project.
 - 1. Acceptable Substitutes: None – Owner's Standard

2.09 POWER SUPPLIES: SCHLAGE/VON DUPRIN PS900 SERIES

- A. Provide appropriate quantity of power supplies necessary for proper operation of electrified locking components as recommended by manufacturer of electrified locking components with consideration for each electrified component using power supply, location of power supply, and approved wiring diagrams. Locate power supplies as directed by Architect.
 - 1. Acceptable Substitutes: Dynalock 5000 Series, Locknetics LP Series

2.10 KEYING:

- A. Keying System: Factory registered, complying with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.

- B. Keying Requirements – All keying by Stanley Security Solutions into existing Peaks key system.
- C. Keys and Cylinders
 - 1. Quantity: Furnish in the following quantities.
 - a. Change (Day) Keys: 2ea per lock.
 - b. Permanent Control Keys: 2ea.
 - c. Grandmaster Keys: 3ea.
 - d. Submaster Keys: 3ea.
 - e. Construcion Operating Keys: 9ea
 - f. Construction Control Keys: 4ea
 - g. Additional Cores: 20ea

2.11 KEY CONTROL SYSTEM: TELKEE

- A. Provide key control system, including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet, all as recommended by system manufacturer, with capacity for 150% of number of locks required for Project. Provide complete cross index system set up by hardware supplier, and place keys on markers and hooks in cabinet as determined by final key schedule.
 - 1. Acceptable Substitutes: HPC, Lund

2.12 SURFACE CLOSERS: LCN 4010/4110/4020 SERIES

- A. Provide cast iron door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. Certify surface mounted mechanical closers to meet fifteen million (15,000,000) full load cycles.
 - 1. Acceptable Substitutes: None – Owner’s Standard

2.13 ELECTRO-MECHANICAL AUTOMATIC OPERATORS: LCN SENIOR SWING SERIES

- A. Provide low energy automatic operator units that are electro-mechanical design complying with ANSI/BHMA A156.19. Locate actuators and other controls as directed by Architect.
 - 1. Acceptable Substitutes: None – Owner’s Standard

2.14 DOOR TRIM: IVES

- A. Provide push plates, push bars, pull plates, pulls, and hands-free reversible door pulls with diameter and length as scheduled.
 - 1. Acceptable Substitutes: Trimco, Burns

2.15 PROTECTION PLATES: IVES

- A. Provide protection plates with beveled four edges as scheduled. Size plates 2 inches (51 mm) less width of door on single doors, pairs of doors with a mullion, and doors with edge guards. Size plates 1 inch (25 mm) less width of door on pairs without a mullion or edge guards. At fire rated doors, provide protection plates over 16 inches high with UL label.

- 1. Acceptable Substitutes: Trimco, Burns

2.16 OVERHEAD STOPS AND OVERHEAD STOP/HOLDERS: GLYNN-JOHNSON

- A. Provide overhead stop at doors where specified and where conditions do not allow for a wall stop or floor stop presents tripping hazard.

- 1. Acceptable Substitutes: ABH, Sargent

2.17 DOOR STOPS AND HOLDERS: IVES

- A. Provide door stops at each door leaf. Provide wall stops wherever possible. Provide concave type where lockset has a push button or thumbturn. Where a wall stop cannot be used, provide universal floor stops. Where wall or floor stop cannot be used, provide overhead stop. Provide roller bumper where doors open into each other and overhead stop cannot be used.

- 1. Acceptable Substitutes: Trimco, Burns

2.18 THRESHOLDS, WEATHERSTRIPPING, AND GASKETING: ZERO INTERNATIONAL

- A. Provide thresholds, weather-stripping, and gasketing systems as specified and per architectural details. Match finish of other items. Where smoke- and draft-control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.

- 1. Acceptable Substitutes: Pemko, National Guard Products

2.19 SILENCERS: IVES

- A. Provide "push-in" type silencers for hollow metal or wood frames. Provide one silencer per 30 inches (762 mm) of height on each single frame, and two for each pair frame. Omit where gasketing is specified.

- 1. Acceptable Substitutes: Trimco, Rockwood

2.20 MAGNETIC HOLDERS: LCN

- A. Provide wall or floor mounted electromagnetic door release as specified with minimum of 25 pounds of holding force. Coordinate projection of holder and armature with other hardware and wall conditions to ensure that door sits parallel to wall when fully open. Connect magnetic holders on fire-rated doors into the fire control panel for fail-safe operation.

- 1. Acceptable Substitutes: Rixson, Sargent

2.21 DOOR POSITION SWITCHES: SCHLAGE

- A. Provide door position switches as specified. Coordinate door and frame preparations with door and frame suppliers.
 - 1. Acceptable Substitutes: GE-Interlogix, Sargent

2.22 DOOR VIEWERS: IVES

- A. Provide appropriate door viewer for door type and rating with minimum of 180-degree view area.
 - 1. Acceptable Substitutes: Trimco, Rockwood

2.23 LATCH PROTECTORS: IVES

- A. Provide stainless steel latch protectors of type required to function with specified lock.
 - 1. Acceptable Substitutes: Trimco, Don-Jo

2.24 FINISHES

- A. Provide hardware with finishes as indicated in hardware sets.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance. Verify doors, frames, and walls have been properly reinforced for hardware installation. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation. Submit a list of deficiencies in writing and proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Where on-site modification of doors and frames is required, prepare hardware locations and reinstall in accordance with installation requirements for new door hardware and with:
 - 1. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.
 - 2. Wood Doors: DHI WDHS.5 "Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors."
 - 3. Doors in rated assemblies: NFPA 80 for restrictions on on-site door hardware preparation.

3.03 INSTALLATION

- A. Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.
 - 1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
 - 2. Custom Steel Doors and Frames: HMMA 831.
 - 3. Interior Architectural Wood Flush Doors: ANSI/WDMA I.S. 1A
 - 4. Installation Guide for Doors and Hardware: DHI TDH-007-20
- B. Install door hardware in accordance with NFPA 80, NFPA 101 and provide post-install inspection, testing as specified in section 1.03.E unless otherwise required to comply with governing regulations.
- C. Install hardware in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.
- D. Lock Cylinders: Install construction cores to secure building and areas during construction period. Replace construction cores with permanent cores as indicated in keying section. Furnish permanent cores to Owner for installation.
- E. Coordinate Division 26, ELECTRICAL and Division 28 ELECTRONIC SAFETY AND SECURITY sections for wiring and connections of related components.
- F. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.
- G. Door Closers: Mount closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.
- H. Stops: Do not mount floor stops where they may impede traffic or present tripping hazard.

3.04 FIELD QUALITY CONTROL

- A. Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
- B. Clean adjacent surfaces soiled by door hardware installation. Clean operating items per manufacturer's instructions to restore proper function and finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.05 DOOR HARDWARE SCHEDULE

- A. The intent of the hardware specification is to specify the hardware for interior and exterior doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.

- B. Elevation riser diagrams included in this section and/or section 28 1300 are based on the electrified products listed in the hardware sets. Any deviation from the specified products shall make the elevation riser diagrams null and void. If non-specified products are submitted on, material supplier to provide new elevation riser diagrams as part of their submittal package.
- C. Discrepancies, conflicting hardware, and missing items are to be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application.
- D. Hardware items are referenced in the following hardware schedule. Refer to the above specifications for special features, options, cylinders/keying, and other requirements.
- E. Hardware Sets:













⚡ = Hardware Item Requiring Electrical Coordination

Abbreviation	Name
BES	Best Locking Systems
GLY	Glynn-Johnson Corp
IVE	H.B. Ives
LCN	LCN Commercial Division
LKY	Lockey USA
SCE	Schlage Electronic Security
SCH	Schlage Lock Company
VON	Von Duprin
WIK	Wikk Industries, Inc.
ZER	Zero International Inc

HARDWARE SET: 01

DOOR NUMBER:
414C

EACH TO HAVE:

2	EA	CONT. HINGE	112XY		628	IVE
1	EA	REMOVABLE MULLION	KR4954-STAB-ANGLE PLATE		689	VON
1	EA	PANIC HARDWARE	99-DT		626	VON
1	EA	PANIC HARDWARE	99-NL		626	VON
1	EA	RIM CYLINDER	1E72		626	BES
1	EA	MORTISE CYLINDER	1E74		626	BES
2	EA	OH STOP	100S		630	GLY
2	EA	SURFACE CLOSER	4021		689	LCN
2	EA	FLUSH CEILNG MTG PLATE	4020-18G SRT		689	LCN
1	EA	MULLION SEAL	8780N X D.H.		BK	ZER
2	EA	DOOR SWEEP	39A X D.W.		A	ZER
1	EA	THRESHOLD	8655A X D.W.		A	ZER
1	SET	SEALS	BY ALUM DOOR/FRAME MFG			

HARDWARE SET: 01A

DOOR NUMBER:

200 415C

EACH TO HAVE:

1	EA	CONT. HINGE	112XY		628	IVE
1	EA	CONT. HINGE	112XY EPT		628	IVE
1	EA	POWER TRANSFER	EPT10		↗ 689	VON
1	EA	REMOVABLE MULLION	KR4954-STAB-ANGLE PLATE		689	VON
1	EA	PANIC HARDWARE	99-DT		626	VON
1	EA	ELEC PANIC HARDWARE	QEL-99-NL 24 VDC		↗ 626	VON
1	EA	RIM CYLINDER	1E72		626	BES
1	EA	MORTISE CYLINDER	1E74		626	BES
2	EA	OH STOP	100S		630	GLY
2	EA	SURFACE CLOSER	4021		689	LCN
2	EA	FLUSH CEILING MTG PLATE	4020-18G SRT		689	LCN
1	EA	MULLION SEAL	8780N X D.H.		BK	ZER
2	EA	DOOR SWEEP	39A X D.W.		A	ZER
1	EA	THRESHOLD	8655A X D.W.		A	ZER
1	EA	CARD READER	MT11 OR MT15 - BY ACCESS CONTROL INTEGRATOR		↗ BLK	SCE
2	EA	DOOR CONTACT	679-05 WD OR HM AS REQ'D		↗ BLK	SCE
1	EA	MOTION SENSOR	SCANII 12/24 VDC - BY ACCESS CONTROL INTEGRATOR		↗ BLK	SCE
1	EA	POWER SUPPLY	PS902 BBK 900-2RS 120/240 VAC		↗ LGR	SCE
1	SET	SEALS	BY ALUM DOOR/FRAME MFG			
1	EA	WIRING DIAGRAMS	ELEVATION 3017		↗	VON

DOOR NORMALLY CLOSED AND LOCKED.

ENTRY BY VALID CREDENTIAL AT CARD READER OR BY KEY AT CYLINDER.

RX MOTION SENSOR SHUNTS DOOR FORCED OPEN IN ACCESS CONTROL SYSTEM.

KEY OVER-RIDE WILL CAUSE DOOR FORCED ALARM IN ACCESS CONTROL SYSTEM.













FREE EGRESS AT ALL TIMES.

HARDWARE SET: 01B

DOOR NUMBER:

100

EACH TO HAVE:







2	EA	CONT. HINGE	112XY		628	IVE
1	EA	REMOVABLE MULLION	KR4954-STAB-ANGLE PLATE		689	VON
1	EA	PANIC HARDWARE	99-DT		626	VON
1	EA	PANIC HARDWARE	99-NL		626	VON
1	EA	RIM CYLINDER	1E72		626	BES
1	EA	MORTISE CYLINDER	1E74		626	BES
2	EA	SURFACE CLOSER	4021		689	LCN
2	EA	FLUSH CEILING MTG PLATE	4020-18G SRT		689	LCN
2	EA	FLOOR STOP	FS18S		BLK	IVE
1	EA	MULLION SEAL	8780N X D.H.		BK	ZER
2	EA	DOOR SWEEP	39A X D.W.		A	ZER
1	EA	THRESHOLD	8655A X D.W.		A	ZER
1	SET	SEALS	BY ALUM DOOR/FRAME MFG			

HARDWARE SET: 02

DOOR NUMBER:

101 108 403 410

EACH TO HAVE:







3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	STOREROOM LOCK	9K37D 15D S3		626	BES
1	EA	SURFACE CLOSER	4011		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

HARDWARE SET: 02A

DOOR NUMBER:

409

EACH TO HAVE:





3	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	STOREROOM LOCK	9K37D 15D S3		626	BES
1	EA	SURFACE CLOSER	4111 EDA		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

HARDWARE SET: 03

DOOR NUMBER:

102	203	207	302	303	304
305A	312	401	402C	414A	

EACH TO HAVE:







3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	CLASSROOM LOCK	9K37R 15D S3		626	BES
1	EA	WALL STOP	WS406/407CVX		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

HARDWARE SET: 04

DOOR NUMBER:

103	105	307	309	408	412
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EACH TO HAVE:





3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	PRIVACY SET	9K30L 15D S3		626	BES
1	EA	SURFACE CLOSER	4011		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CCV		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

HARDWARE SET: 05

DOOR NUMBER:

104	301A
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EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	CLASSROOM LOCK	9K37R 15D S3		626	BES
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	SET	SEALS	188S X D.S.		BLK	ZER

HARDWARE SET: 06

DOOR NUMBER:
 405







EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	STOREROOM LOCK	9K37D 15D S3		626	BES
1	EA	OH STOP	90S		630	GLY
1	EA	SURFACE CLOSER	4011		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

HARDWARE SET: 06A

DOOR NUMBER:
 106 411

EACH TO HAVE:







3	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	FIRE EXIT HARDWARE	99-NL-F		626	VON
1	EA	RIM CYLINDER	1E72		626	BES
1	EA	SURFACE CLOSER	4111 SCUSH		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	SET	SEALS	188S X D.S.		BLK	ZER

HARDWARE SET: 07

DOOR NUMBER:

107	109	110	111	112	113
114	115	116	117	118	120
205	206	206C	208	208C	209
210	210C	211	213	305	402

EACH TO HAVE:










3	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	STOREROOM LOCK	9K37D 15D S3		626	BES
1	EA	SURFACE CLOSER	4111 HEDA		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

HOLD OPEN CLOSER

HARDWARE SET: 08

DOOR NUMBER:
201





EACH TO HAVE:

6	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
2	EA	MANUAL FLUSH BOLT	FB458		626	IVE
1	EA	DUST PROOF STRIKE	DP2		626	IVE
1	EA	STOREROOM LOCK	9K37D 15D S3 3/4		626	BES
1	EA	SURFACE CLOSER	4011		689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
2	EA	WALL STOP	WS406/407CVX		630	IVE
1	EA	ASTRAGAL	44STST X 188S X D.H. MOUNT PUSH SIDE INACTIVE LEAF		630	ZER
2	EA	SILENCER	SR64		GRY	IVE

HARDWARE SET: 09

DOOR NUMBER:
202A 404A





EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	STOREROOM LOCK	9K37D 15D S3		626	BES
1	EA	OH STOP	450S		630	GLY
3	EA	SILENCER	SR64		GRY	IVE

HARDWARE SET: 10

DOOR NUMBER:
205A 302A

EACH TO HAVE:





3	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	CLASSROOM LOCK	9K37R 15D S3		626	BES
1	EA	WALL STOP	WS406/407CVX		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

HARDWARE SET: 11

DOOR NUMBER:

206A 208A 210A

EACH TO HAVE:





3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	STOREROOM LOCK	9K37D 15D S3		626	BES
1	EA	WALL STOP	WS406/407CVX		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

HARDWARE SET: 12

DOOR NUMBER:

206B 208B 210B

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	PASSAGE SET	9K30N 15D S3		626	BES
1	EA	WALL STOP	WS406/407CVX		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

HARDWARE SET: 13

DOOR NUMBER:
 300

EACH TO HAVE:

1	EA	CONT. HINGE	112XY EPT		628	IVE
1	EA	POWER TRANSFER	EPT10		✂ 689	VON
1	EA	ELEC PANIC HARDWARE	LX-QEL-99-NL 24 VDC		✂ 626	VON
1	EA	RIM CYLINDER	1E72		626	BES
1	EA	OH STOP	100S		630	GLY
1	EA	SURF. AUTO OPERATOR	9542 MS AS REQ (120/240 VAC)		✂ ANCL R	LCN
1	EA	ROCKER SWITCH	8310-806R (ON/OFF/HOLD- OPEN)		✂	LCN
2	EA	ACTUATOR, TOUCH	8310-853T		✂ 630	LCN
1	EA	MOUNTING PLATE	9540-18		ANCL R	LCN
1	EA	BOLLARD	B-8RD-AT-32D-BP-RD15		✂ 630	WIK
1	EA	DOOR SWEEP	39A X D.W.		A	ZER
1	EA	THRESHOLD	8655A X D.W.		A	ZER
1	EA	CARD READER	MT11 OR MT15 - BY ACCESS CONTROL INTEGRATOR		✂ BLK	SCE
1	EA	DOOR CONTACT	679-05 WD OR HM AS REQ'D		✂ BLK	SCE
1	EA	MOTION SENSOR	SCANII 12/24 VDC - BY ACCESS CONTROL INTEGRATOR		✂ BLK	SCE
1	EA	POWER SUPPLY	PS902 BBK 900-2RS 120/240 VAC		✂ LGR	SCE
	EA	AXIS PHONE / REMOTE RELEASE	BY ACCESS CONTROL INTEGRATOR		✂	
1	SET	SEALS	BY ALUM DOOR/FRAME MFG			
1	EA	WIRING DIAGRAMS	ELEVATION 3157		✂	VON

DOOR NORMALLY CLOSED AND LOCKED.

ENTRY BY VALID CREDENTIAL AT CARD READER, REMOTE RELEASE AT RECEPTION OR BY KEY AT CYLINDER.

RX MOTION SENSOR SHUNTS DOOR FORCED OPEN IN ACCESS CONTROL SYSTEM.

INTERIOR ACTUATOR TO START OPENING CYCLE (UNLESS ADO IS POWERED OFF)

EXTERIOR ACTUATOR WIRED IN SERIES THROUGH LX SWITCH IN EXIT DEVICE SUCH THAT ON VALID CARD OR TIME ZONE CONTROL ACTUATOR CAN BE PRESSED TO START OPENING CYCLE.

KEY OVER-RIDE WILL CAUSE DOOR FORCED EVENT IN ACCESS CONTROL SYSTEM.

FREE EGRESS AT ALL TIMES.








NOTE: THE EXTERIOR WALL ACTUATOR SHALL BE WIRED IN SERIES WITH THE "LX" SWITCH IN THE PANIC DEVICE - SUCH THAT WHEN THE PANIC DEVICE IS UNLOCKED BY THE CARD READER ON THE EXTERIOR, THE EXTERIOR WALL ACTUATOR IS ACTIVE, AND THE OPERATOR WILL OPEN THE DOOR WHEN THE WALL ACTUATOR IS PUSHED. THE INTERIOR WALL ACTUATOR SHALL BE WIRED TO WHERE WHEN PUSHED THE "QEL" ON THE PANIC DEVICE WILL RETRACT AND THE OPERATOR WILL OPEN THE DOOR.

HARDWARE SET: 14

DOOR NUMBER:

300A 311A 311C 407

EACH TO HAVE:






3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		652	IVE
1	EA	PANIC HARDWARE	99-L-06		626	VON
1	EA	RIM CYLINDER	1E72		626	BES
1	EA	SURFACE CLOSER	4111 EDA		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

HARDWARE SET: 15

DOOR NUMBER:

301

EACH TO HAVE:





3	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	CLASSROOM LOCK	9K37R 15D S3		626	BES
1	EA	SURFACE CLOSER	4111 SCUSH		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	SET	SEALS	188S X D.S.		BLK	ZER

HARDWARE SET: 16

DOOR NUMBER:

303A 402B







EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	PRIVACY SET	9K30L 15D S3		626	BES
1	EA	WALL STOP	WS406/407CCV		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

HARDWARE SET: 17

DOOR NUMBER:
306








EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	STOREROOM LOCK	9K37D 15D S3		626	BES
1	EA	SURFACE CLOSER	4011		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	SET	SEALS	188S X D.S.		BLK	ZER

HARDWARE SET: 18

DOOR NUMBER:
308 310








EACH TO HAVE:

3	EA	HINGE	5BB1HW 4.5 X 4.5		652	IVE
1	EA	PUSH PLATE	8200 4" X 16"		630	IVE
1	EA	PULL PLATE	8302 6" 4" X 16"		630	IVE
1	EA	SURFACE CLOSER	4011		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

HARDWARE SET: 19

DOOR NUMBER:
316B 316C






EACH TO HAVE:

1	EA	CONT. HINGE	112XY		628	IVE
1	EA	PANIC HARDWARE	99-DT		626	VON
1	EA	OH STOP	100S		630	GLY
1	EA	SURFACE CLOSER	4021		689	LCN
1	EA	FLUSH CEILING MTG PLATE	4020-18G SRT		689	LCN
1	EA	DOOR SWEEP	39A X D.W.		A	ZER
1	EA	THRESHOLD	8655A X D.W.		A	ZER
1	SET	SEALS	BY ALUM DOOR/FRAME MFG			

HARDWARE SET: 20

DOOR NUMBER:
314















EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	STOREROOM LOCK	9K37D 15D S3		626	BES
1	EA	SURFACE CLOSER	4111 SCUSH		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

HARDWARE SET: 21

DOOR NUMBER:
316A

EACH TO HAVE:

1	EA	CONT. HINGE	112XY EPT		628	IVE
1	EA	POWER TRANSFER	EPT10	 ⚡	689	VON
1	EA	ELEC PANIC HARDWARE	QEL-99-NL 24 VDC	 ⚡	626	VON
1	EA	RIM CYLINDER	1E72		626	BES
1	EA	SURFACE CLOSER	4021		689	LCN
1	EA	FLUSH CEILING MTG PLATE	4020-18G SRT		689	LCN
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	EA	DOOR SWEEP	39A X D.W.		A	ZER
1	EA	THRESHOLD	8655A X D.W.		A	ZER
1	EA	CARD READER	MT11 OR MT15 - BY ACCESS CONTROL INTEGRATOR	 ⚡	BLK	SCE
1	EA	DOOR CONTACT	679-05 WD OR HM AS REQ'D	 ⚡	BLK	SCE
1	EA	MOTION SENSOR	SCANII 12/24 VDC - BY ACCESS CONTROL INTEGRATOR	 ⚡	BLK	SCE
1	EA	POWER SUPPLY	PS902 BBK 900-2RS 120/240 VAC	 ⚡	LGR	SCE
1	SET	SEALS	BY ALUM DOOR/FRAME MFG			
1	EA	WIRING DIAGRAMS	ELEVATION 3001	 ⚡		VON

DOOR NORMALLY CLOSED AND LOCKED.
ENTRY BY VALID CREDENTIAL AT CARD READER OR BY KEY AT CYLINDER.
RX MOTION SENSOR SHUNTS DOOR FORCED OPEN IN ACCESS CONTROL SYSTEM.
KEY OVER-RIDE WILL CAUSE DOOR FORCED ALARM IN ACCESS CONTROL SYSTEM.
FREE EGRESS AT ALL TIMES.

HARDWARE SET: 21A

DOOR NUMBER:

313A 313B

EACH TO HAVE:

1	EA	CONT. HINGE	112XY EPT		628	IVE
1	EA	POWER TRANSFER	EPT10		✂ 689	VON
1	EA	ELEC PANIC HARDWARE	QEL-99-NL 24 VDC		✂ 626	VON
1	EA	RIM CYLINDER	1E72		626	BES
1	EA	OH STOP	100S		630	GLY
1	EA	SURFACE CLOSER	4021		689	LCN
1	EA	FLUSH CEILNG MTG PLATE	4020-18G SRT		689	LCN
1	EA	DOOR SWEEP	39A X D.W.		A	ZER
1	EA	THRESHOLD	8655A X D.W.		A	ZER
1	EA	CARD READER	MT11 OR MT15 - BY ACCESS CONTROL INTEGRATOR		✂ BLK	SCE
1	EA	DOOR CONTACT	679-05 WD OR HM AS REQ'D		✂ BLK	SCE
1	EA	MOTION SENSOR	SCANII 12/24 VDC - BY ACCESS CONTROL INTEGRATOR		✂ BLK	SCE
1	EA	POWER SUPPLY	PS902 BBK 900-2RS 120/240 VAC		✂ LGR	SCE
1	SET	SEALS	BY ALUM DOOR/FRAME MFG			
1	EA	WIRING DIAGRAMS	ELEVATION 3001		✂	VON

DOOR NORMALLY CLOSED AND LOCKED.
 ENTRY BY VALID CREDENTIAL AT CARD READER OR BY KEY AT CYLINDER.
 RX MOTION SENSOR SHUNTS DOOR FORCED OPEN IN ACCESS CONTROL SYSTEM.
 KEY OVER-RIDE WILL CAUSE DOOR FORCED ALARM IN ACCESS CONTROL SYSTEM.
 FREE EGRESS AT ALL TIMES.

HARDWARE SET: 22

DOOR NUMBER:

316D

EACH TO HAVE:






1	EA	CONT. HINGE	112XY		628	IVE
1	EA	DUMMY PUSH BAR	330-DT-990		626	VON
1	EA	SURFACE CLOSER	4021		689	LCN
1	EA	FLUSH CEILNG MTG PLATE	4020-18G SRT		689	LCN
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	SET	SEALS	BY ALUM DOOR/FRAME MFG			

HARDWARE SET: 23

DOOR NUMBER:

316E 316F

EACH TO HAVE:











1	EA	CONT. HINGE	112XY		628	IVE
1	EA	DUMMY PUSH BAR	330-DT-990		626	VON
1	EA	OH STOP	100S		630	GLY
1	EA	SURFACE CLOSER	4021		689	LCN
1	EA	FLUSH CEILING MTG PLATE	4020-18G SRT		689	LCN
1	SET	SEALS	BY ALUM DOOR/FRAME MFG			

HARDWARE SET: 24

DOOR NUMBER:

400A

EACH TO HAVE:

6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		652	IVE
2	EA	PANIC HARDWARE	LD-9927-L-LBR-06		626	VON
2	EA	RIM CYLINDER	1E72		626	BES
2	EA	SURFACE CLOSER	4111 EDA		689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
2	EA	MAGNETIC DOOR HOLDER	SEM7850 12V/24V/120V	 ⚡	689	LCN
1	SET	ASTRAGAL	8193AA X D.H.		AA	ZER
2	EA	SILENCER	SR64		GRY	IVE
1	EA	POWER SUPPLY	PS902 FA900 120/240 VAC	 ⚡	LGR	SCE
1	EA	WIRING DIAGRAMS	ELEVATION 10009	 ⚡		VON

HARDWARE SET: 25

DOOR NUMBER:
 400D

EACH TO HAVE:





1	EA	CONT. HINGE	112XY		628	IVE
1	EA	CONT. HINGE	112XY EPT		628	IVE
1	EA	POWER TRANSFER	EPT10		↗ 689	VON
1	EA	REMOVABLE MULLION	KR4954-STAB-ANGLE PLATE		689	VON
1	EA	PANIC HARDWARE	99-DT		626	VON
1	EA	ELEC PANIC HARDWARE	QEL-99-NL 24 VDC		↗ 626	VON
1	EA	RIM CYLINDER	1E72		626	BES
1	EA	MORTISE CYLINDER	1E74		626	BES
2	EA	SURFACE CLOSER	4021		689	LCN
2	EA	FLUSH CEILING MTG PLATE	4020-18G SRT		689	LCN
2	EA	FLOOR STOP	FS18S		BLK	IVE
1	EA	MULLION SEAL	8780N X D.H.		BK	ZER
2	EA	DOOR SWEEP	39A X D.W.		A	ZER
1	EA	THRESHOLD	8655A X D.W.		A	ZER
1	EA	CARD READER	MT11 OR MT15 - BY ACCESS CONTROL INTEGRATOR		↗ BLK	SCE
2	EA	DOOR CONTACT	679-05 WD OR HM AS REQ'D		↗ BLK	SCE
1	EA	MOTION SENSOR	SCANII 12/24 VDC - BY ACCESS CONTROL INTEGRATOR		↗ BLK	SCE
1	EA	POWER SUPPLY	PS902 BBK 900-2RS 120/240 VAC		↗ LGR	SCE
1	SET	SEALS	BY ALUM DOOR/FRAME MFG			
1	EA	WIRING DIAGRAMS	ELEVATION 3017		↗	VON

DOOR NORMALLY CLOSED AND LOCKED.
 ENTRY BY VALID CREDENTIAL AT CARD READER OR BY KEY AT CYLINDER.
 RX MOTION SENSOR SHUNTS DOOR FORCED OPEN IN ACCESS CONTROL SYSTEM.
 KEY OVER-RIDE WILL CAUSE DOOR FORCED ALARM IN ACCESS CONTROL SYSTEM.
 FREE EGRESS AT ALL TIMES.

HARDWARE SET: 26

DOOR NUMBER:
402A








EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	STOREROOM LOCK	9K37D 15D S3		626	BES
1	EA	OH STOP	90S		630	GLY
3	EA	SILENCER	SR64		GRY	IVE

HARDWARE SET: 27

DOOR NUMBER:
407A

EACH TO HAVE:










1	EA	CONT. HINGE	112XY		628	IVE
1	EA	PANIC HARDWARE	99-EO		626	VON
1	EA	SURFACE CLOSER	4021		689	LCN
1	EA	FLUSH CEILING MTG PLATE	4020-18G SRT		689	LCN
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	EA	DOOR SWEEP	39A X D.W.		A	ZER
1	EA	THRESHOLD	8655A X D.W.		A	ZER
1	SET	SEALS	BY ALUM DOOR/FRAME MFG			

EXIT ONLY

HARDWARE SET: 28

DOOR NUMBER:
414












EACH TO HAVE:

6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		652	IVE
1	EA	REMOVABLE MULLION	KR4954 STAB		689	VON
2	EA	PANIC HARDWARE	99-L-06		626	VON
2	EA	RIM CYLINDER	1E72		626	BES
1	EA	MORTISE CYLINDER	1E74		626	BES
2	EA	SURFACE CLOSER	4111 SCUSH		689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	MULLION SEAL	8780N X D.H.		BK	ZER
2	EA	SILENCER	SR64		GRY	IVE

HARDWARE SET: 29

DOOR NUMBER:
414B

EACH TO HAVE:












6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		652	IVE
1	EA	REMOVABLE MULLION	KR4954 STAB		689	VON
2	EA	PANIC HARDWARE	99-EO		626	VON
1	EA	MORTISE CYLINDER	1E74		626	BES
2	EA	SURFACE CLOSER	4111 SCUSH		689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	RAIN DRIP	142A X D.W. +4"		AA	ZER
1	SET	SEALS	8303AA X D.S.		AA	ZER
1	EA	MULLION SEAL	8780N X D.H.		BK	ZER
2	EA	DOOR SWEEP	39A X D.W.		A	ZER
1	EA	THRESHOLD	8655A X D.W.		A	ZER

EXIT ONLY

HARDWARE SET: 30

DOOR NUMBER:
415 415B

EACH TO HAVE:








6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		652	IVE
1	EA	REMOVABLE MULLION	KR4954 STAB		689	VON
2	EA	PANIC HARDWARE	99-L-06		626	VON
2	EA	RIM CYLINDER	1E72		626	BES
1	EA	MORTISE CYLINDER	1E74		626	BES
1	EA	SURFACE CLOSER	4111 EDA		689	LCN
1	EA	SURFACE CLOSER	4111 SCUSH		689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
1	EA	MULLION SEAL	8780N X D.H.		BK	ZER
2	EA	SILENCER	SR64		GRY	IVE

HARDWARE SET: 31

DOOR NUMBER:

415A 415D

EACH TO HAVE:











6	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
2	EA	MANUAL FLUSH BOLT	FB458		626	IVE
1	EA	DUST PROOF STRIKE	DP2		626	IVE
1	EA	STOREROOM LOCK	9K37D 15D S3 3/4		626	BES
2	EA	OH STOP	90S		630	GLY
1	EA	SECURITY ASTRAGAL	43SP X 188S X D.H.		600	ZER
2	EA	SILENCER	SR64		GRY	IVE

HARDWARE SET: 32

DOOR NUMBER:

416

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	ENTRANCE LOCK	9K37AB 15D S3		626	BES
1	EA	LOCK GUARD	LG13		630	IVE
1	EA	SURFACE CLOSER	4111 SHCUSH		689	LCN
1	EA	ARMOR PLATE	8400 36" X 2" LDW B-CS		630	IVE
1	EA	RAIN DRIP	142A X D.W. +4"		AA	ZER
1	SET	SEALS	8303AA X D.S.		AA	ZER
1	EA	DOOR SWEEP	39A X D.W.		A	ZER
1	EA	THRESHOLD	8655A X D.W.		A	ZER
1	EA	DOOR VIEWER	698		626	IVE








HOLD OPEN CLOSER

HARDWARE SET: 33

DOOR NUMBER:

416A







EACH TO HAVE:

3	EA	HINGE	5BB1HW 4.5 X 4.5		652	IVE
1	EA	PUSH PLATE	8200 4" X 16"		630	IVE
1	EA	PULL PLATE	8302 6" 4" X 16"		630	IVE
1	EA	SURFACE CLOSER	4011		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

HARDWARE SET: 34

DOOR NUMBER:
416B







EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5		652	IVE
1	EA	PRIVACY SET	9K30L 15D S3		626	BES
1	EA	SURFACE CLOSER	4111 EDA		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

HARDWARE SET: 35

DOOR NUMBER:
416C

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	CLASSROOM LOCK	9K37R 15D S3		626	BES
1	EA	SURFACE CLOSER	4111 HEDA		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	WALL STOP	WS406/407CVX		630	IVE
3	EA	SILENCER	SR64		GRY	IVE

HOLD OPEN CLOSER

HARDWARE SET: 36

DOOR NUMBER:
416D 416E

EACH TO HAVE:













ALL HARDWARE BY DOOR
MANUFACTURER

HARDWARE SET: 37

DOOR NUMBER:

417 418

EACH TO HAVE:










6	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
2	EA	MANUAL FLUSH BOLT	FB458		626	IVE
1	EA	DUST PROOF STRIKE	DP2		626	IVE
1	EA	STOREROOM LOCK	9K37D 15D S3 3/4		626	BES
1	EA	OH STOP	90S		630	GLY
1	EA	SURFACE CLOSER	4111 SCUSH		689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	RAIN DRIP	142A X D.W. +4"		AA	ZER
1	SET	SEALS	8303AA X D.S.		AA	ZER
1	EA	SECURITY ASTRAGAL	43SP X 188S X D.H.		600	ZER
2	EA	DOOR SWEEP	39A X D.W.		A	ZER
1	EA	THRESHOLD	8655A X D.W.		A	ZER

HARDWARE SET: 38

DOOR NUMBER:

418A

EACH TO HAVE:










6	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
2	EA	MANUAL FLUSH BOLT	FB458		626	IVE
1	EA	DUST PROOF STRIKE	DP2		626	IVE
1	EA	STOREROOM LOCK	9K37D 15D S3 3/4		626	BES
1	EA	OH STOP	90S		630	GLY
1	EA	SURFACE CLOSER	4111 SHCUSH		689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	SECURITY ASTRAGAL	43SP X 188S X D.H.		600	ZER
2	EA	SILENCER	SR64		GRY	IVE

HOLD OPEN CLOSER

HARDWARE SET: 39

DOOR NUMBER:
419


EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	STOREROOM LOCK	9K37D 15D S3		626	BES
1	EA	LOCK GUARD	LG13		630	IVE
1	EA	SURFACE CLOSER	4111 SCUSH		689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	RAIN DRIP	142A X D.W. +4"		AA	ZER
1	SET	SEALS	8303AA X D.S.		AA	ZER
1	EA	DOOR SWEEP	39A X D.W.		A	ZER
1	EA	THRESHOLD	8655A X D.W.		A	ZER

HARDWARE SET: G-01

DOOR NUMBER:
G-1 G-10 G-11




EACH TO HAVE:

1	EA	PADLOCK L/CYL-SFIC	KS11D1200		625	SCH
1	EA	PERMANENT CORE	1C7		626	BES
			BALANCE OF HARDWARE BY GATE MANUFACTURER			

HARDWARE SET: G-02

DOOR NUMBER:
G-2 G-6 G-7 G-8 G-9

EACH TO HAVE:

1	EA	PANIC HARDWARE	99-L-06		626	VON
1	EA	RIM CYLINDER	1E72		626	BES
1	EA	GATE CLOSER	TB-200/400/600- SIZE AS REQ'D		BLK	LKY
			BALANCE OF HARDWARE BY GATE MANUFACTURER			

HARDWARE SET: G-03

DOOR NUMBER:
G-5

EACH TO HAVE:










ALL HARDWARE BY GATE
MANUFACTURER

HARDWARE SET: G-04

DOOR NUMBER:

G-3 G-4

EACH TO HAVE:

6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP		630	IVE
1	EA	REMOVABLE MULLION	KR4954 STAB		689	VON
2	EA	PANIC HARDWARE	99-L-06-WH		626	VON
2	EA	RIM CYLINDER	1E72		626	BES
1	EA	MORTISE CYLINDER	1E74		626	BES
2	EA	SURFACE CLOSER	4111 SCUSH SRI		689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS		630	IVE
1	EA	RAIN DRIP	142A X D.W. +4"		AA	ZER
2	EA	SILENCER	SR64		GRY	IVE

END OF SECTION

Legend:

↗ Electrified Opening

Door#	HwSet#
100	01B
101	02
102	03
103	04
104	05
105	04
106	06A
107	07
108	02
109	07
110	07
111	07
112	07
113	07
114	07
115	07
116	07
117	07
118	07
120	07
200 ↗	01A
201	08
202A	09
203	03
205	07
205A	10
206	07
206A	11
206B	12
206C	07
207	03
208	07
208A	11
208B	12
208C	07
209	07
210	07
210A	11
210B	12
210C	07
211	07
213	07
300 ↗	13
300A	14

Door#	HwSet#
301	15
301A	05
302	03
302A	10
303	03
303A	16
304	03
305	07
305A	03
306	17
307	04
308	18
309	04
310	18
311A	14
311C	14
312	03
313A ↗	21A
313B ↗	21A
314	20
316A ↗	21
316B	19
316C	19
316D	22
316E	23
316F	23
400A ↗	24
400D ↗	25
401	03
402	07
402A	26
402B	16
402C	03
403	02
404A	09
405	06
407	14
407A	27
408	04
409	02A
410	02
411	06A
412	04
414	28

Door#	HwSet#
414A	03
414B	29
414C	01
415	30
415A	31
415B	30
415C ↗	01A
415D	31
416	32
416A	33
416B	34
416C	35
416D	36
416E	36
417	37
418	37
418A	38
419	39
G-1	G-01
G-2	G-02
G-3	G-04
G-4	G-04
G-5	G-03
G-6	G-02
G-7	G-02
G-8	G-02
G-9	G-02
G-10	G-01
G-11	G-01

Electrified Elevation Drawings

Project Name: Nancy Lopez Elementary School

Architect Name: PA Architects

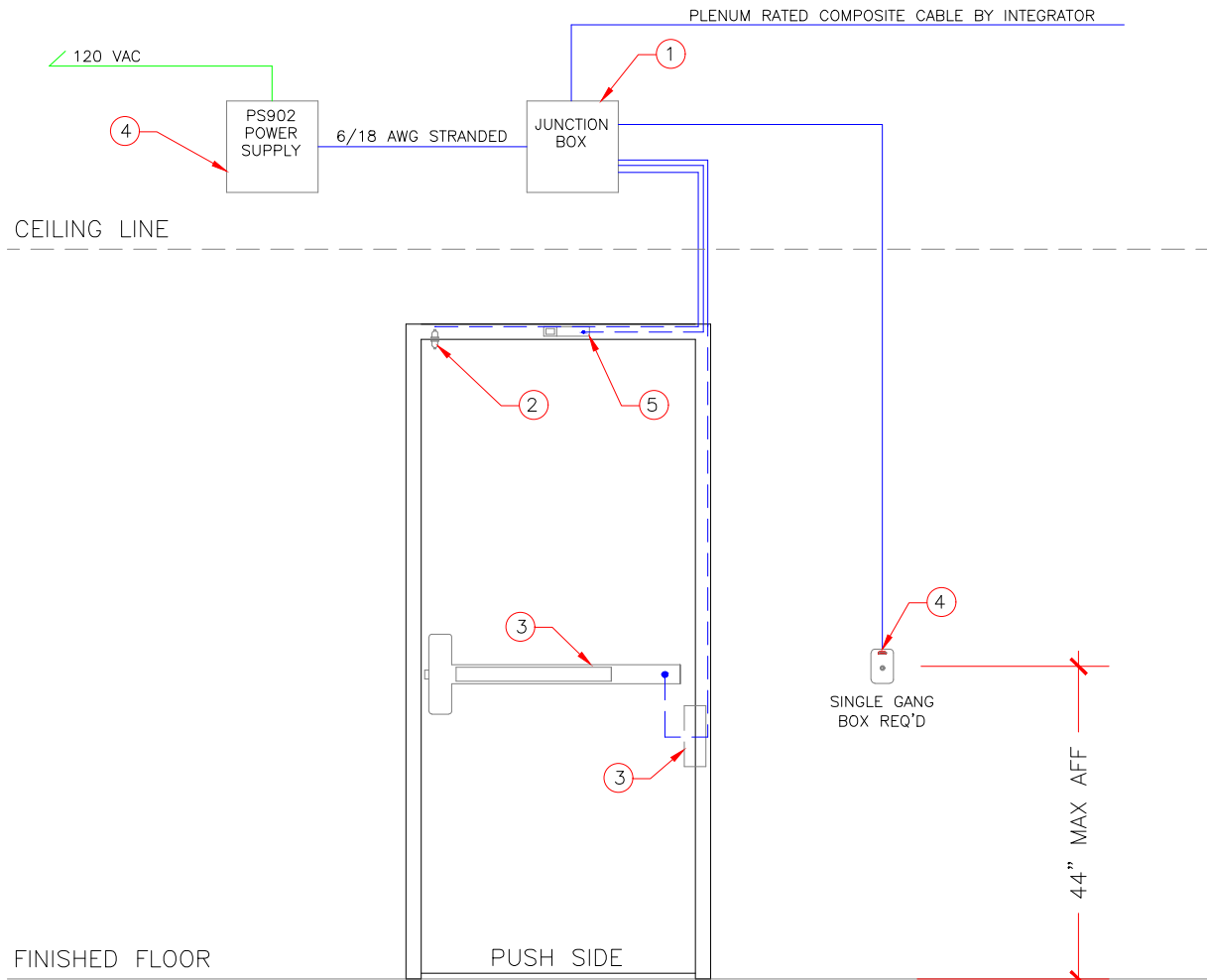
Project Id: 91383

Allegion Id: OPT0323591

Version # 3

Report Date (UTC): 12/18/2023

<i>Door #</i>	<i>Hdw Set #</i>	<i>ELEVATION 3017</i>	<i>ELEVATION 3157</i>	<i>ELEVATION 3001</i>	<i>ELEVATION 10009</i>
200	01A	1			
300	13		1		
313A	21A			1	
313B	21A			1	
316A	21			1	
400D	25	1			
415C	01A	1			1
400A	24				1
	Total	3	1	3	1



DOOR ELEVATION
N.T.S.

DOOR HARDWARE

- ① JUNCTION BOX BY OTHERS
- ② SCHLAGE 679-05 DOOR POSITION SWITCH
- ③ VON DUPRIN QEL / FALCON MEL EXIT DEVICE (24 VDC)
- ④ SCHLAGE MT11 OR MT15
- ⑤ SCHLAGE SCANII RX MOTION SENSOR
- ⑥ VON DUPRIN PS902 X 900-2RS POWER SUPPLY
- ⑦ VON DUPRIN ELECTRIC POWER TRANSFER

WIRE REQUIREMENTS


- 2/20 AWG STRANDED FOR DPS
- 2/18 AWG STRANDED FOR ELECTRIFIED EXIT DEVICE
- 4/18 AWG STRANDED FOR MOTION SENSOR
- 2 WIRES FOR POWER (FROM POWER SUPPLY)
- 2 WIRES FOR REQUEST TO EXIT SIGNAL
- 6/18 AWG STRANDED FROM POWER SUPPLY TO J-BOX
- 2 WIRES FOR POWER TO EXIT DEVICE
- 2 WIRES FOR POWER TO MOTION SENSOR
- 2 WIRES FOR INPUT FROM ACCESS CONTROL SYSTEM
- 8/22 AWG SHIELDED TO CARD READER. VERIFY REQUIREMENTS W/ CARD READER MANUFACTURER.
- PLENUM RATED CABLE FROM ACCESS PANEL TO J-BOX INTEGRATOR TO VERIFY REQUIREMENTS AND PROVIDE AS REQUIRED FOR SYSTEM DESIGN.
- **ANY WIRE RUNS GREATER THAN 200 FEET VERIFY GAUGE WITH MANUFACTURER.**

GENERAL NOTES:

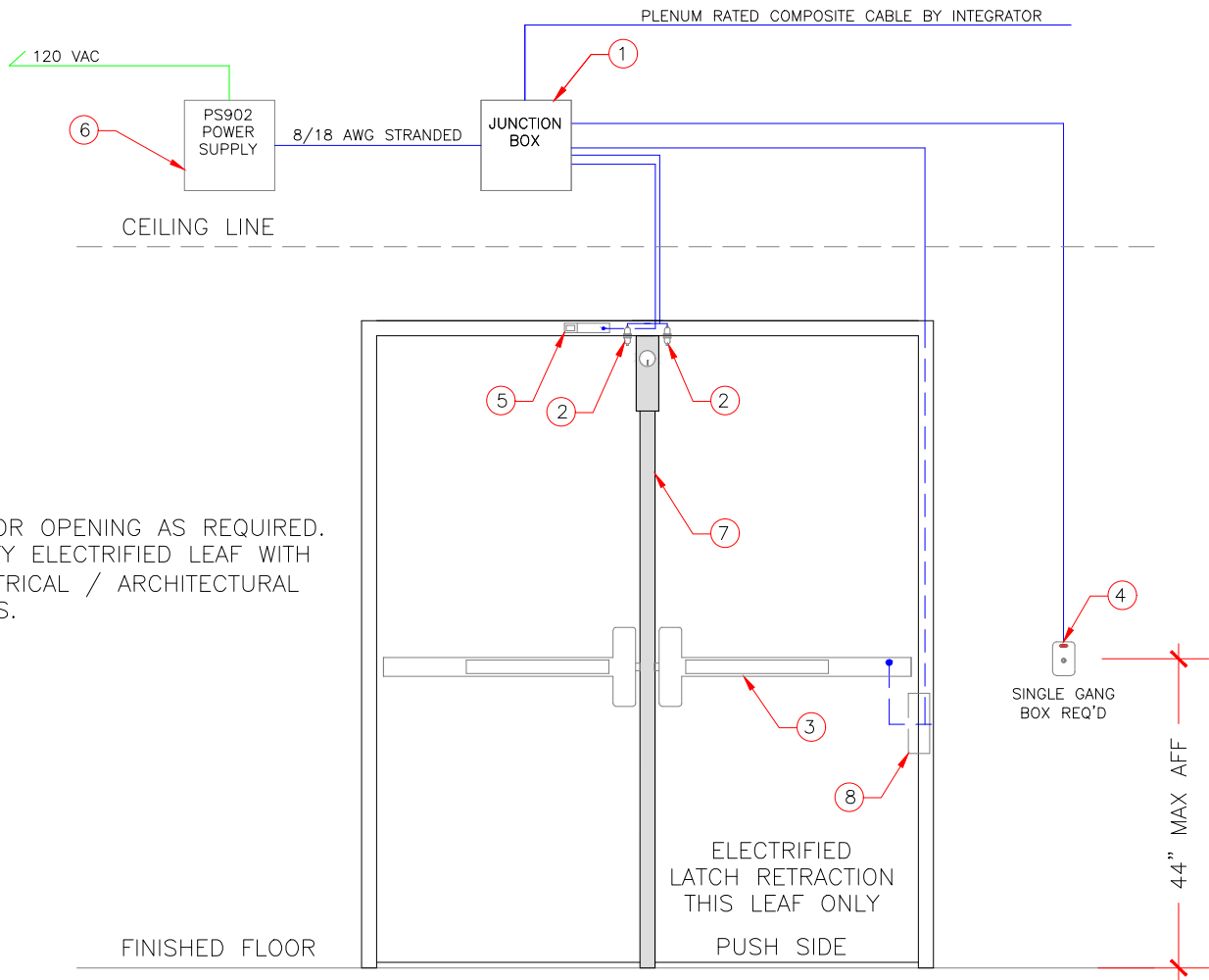
ALL LOW VOLTAGE WIRE TO RUN IN MINIMUM 3/4" CONDUIT OR INSIDE DRYWALL UNLESS NOTED OTHERWISE
 ALL LOW VOLTAGE WIRE TO BE STRANDED WIRE
 ALL GANG BOXES BY ELECTRICAL CONTRACTOR AS REQUIRED
 ALL LOW VOLTAGE WIRING TO BE LABELED CLEARLY AT BOTH END
 ALL MOUNTING HEIGHTS AS SHOWN
 COORDINATE MOUNTING LOCATIONS WITH ELECTRICAL/ARCHITECTURAL PLANS
 ANY DEVIATION FROM HARDWARE SPECIFIED IN SECTION 08710 WILL NEGATE ALL REQUIREMENTS SHOWN
 HEREIN AND REQUIRE NEW DRAWINGS BY OTHERS TO MATCH SUBSTITUTED HARDWARE

OPERATIONAL DESCRIPTION:

DOOR NORMALLY CLOSED AND LOCKED.
 ENTRY BY VALID CREDENTIAL AT CARD READER OR BY KEY AT LOCK.
 REQUEST TO EXIT SWITCH / SENSOR SHUNTS DOOR FORCED OPEN IN ACCESS CONTROL SYSTEM.
 KEY OVER-RIDE WILL CAUSE DOOR FORCED ALARM IN ACCESS CONTROL SYSTEM
 FREE EGRESS AT ALL TIMES.

 ALLEGION ELECTRIFIED ELEVATION DRAWINGS	DRAWING: ELEVATION DRAWING		Checked by:
	Drawn By: Jason Relyea DHT, DHC		3001
	DATE: 03-15-2021	VERSION: 1	
	SCALE: N.T.S.	REVISION:	

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MIRROR OPENING AS REQUIRED. VERIFY ELECTRIFIED LEAF WITH ELECTRICAL / ARCHITECTURAL PLANS.

DOOR ELEVATION
N.T.S.

DOOR HARDWARE

- ① JUNCTION BOX BY OTHERS
- ② SCHLAGE 679-05 DOOR POSITION SWITCH
- ③ VON DUPRIN QEL / FALCON MEL EXIT DEVICE (24 VDC)
- ④ SCHLAGE MT11 OR MT15
- ⑤ SCHLAGE SCANII RX MOTION SENSOR
- ⑥ VON DUPRIN PS902 X 900-2RS
- ⑦ VON DUPRIN REMOVABLE MULLION
- ⑧ VON DUPRIN ELECTRIC POWER TRANSER

WIRE REQUIREMENTS


- 2/20 AWG STRANDED FOR DPS (WIRE IN SERIES)
- 2/18 AWG STRANDED FOR EXIT DEVICE LATCH RETRACTION
- 4/18 AWG STRANDED FOR MOTION SENSOR
 - 2 WIRES FOR POWER
 - 2 WIRES FOR REQUEST TO EXIT SIGNAL
- 8/18 AWG STRANDED FROM POWER SUPPLY TO J-BOX
 - 2 WIRE FOR EACH LATCH RETRACTION EXIT DEVICE
 - 2 WIRES FOR REQUEST TO EXIT POWER
 - 2 WIRES FOR ACCESS CONTROL INPUT
- 8/22 AWG SHIELDED TO CARD READER. VERIFY REQUIREMENTS W/ CARD READER MANUFACTURER.
- PLENUM RATED CABLE FROM ACCESS PANEL TO J-BOX INTEGRATOR TO VERIFY REQUIREMENTS AND PROVIDE AS REQUIRED FOR SYSTEM DESIGN.
- **ANY WIRE RUNS GREATER THAN 200 FEET VERIFY GAUGE WITH MANUFACTURER.**

GENERAL NOTES:

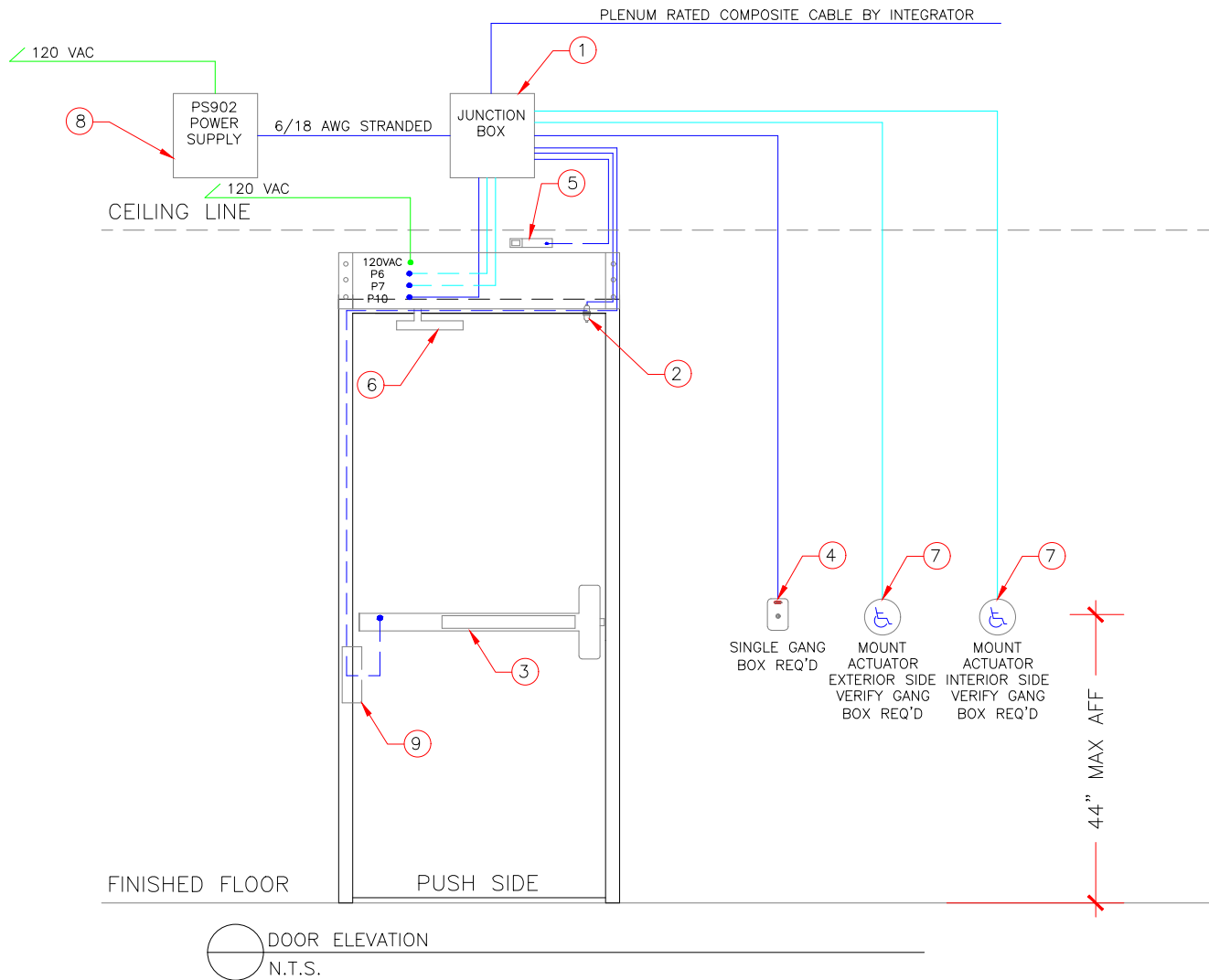
ALL LOW VOLTAGE WIRE TO RUN IN MINIMUM 3/4" CONDUIT OR INSIDE DRYWALL UNLESS NOTED OTHERWISE
 ALL LOW VOLTAGE WIRE TO BE STRANDED WIRE
 ALL GANG BOXES BY ELECTRICAL CONTRACTOR AS REQUIRED
 ALL LOW VOLTAGE WIRING TO BE LABELED CLEARLY AT BOTH END
 ALL MOUNTING HEIGHTS AS SHOWN
 COORDINATE MOUNTING LOCATIONS WITH ELECTRICAL/ARCHITECTURAL PLANS
 ANY DEVIATION FROM HARDWARE SPECIFIED IN SECTION 08710 WILL NEGATE ALL REQUIREMENTS SHOWN
 HEREIN AND REQUIRE NEW DRAWINGS BY OTHERS TO MATCH SUBSTITUTED HARDWARE

OPERATIONAL DESCRIPTION:

DOOR NORMALLY CLOSED AND LOCKED.
 ENTRY BY VALID CREDENTIAL AT CARD READER OR BY KEY AT LOCK.
 REQUEST TO EXIT SWITCH / SENSOR SHUNTS DOOR FORCED OPEN IN ACCESS CONTROL SYSTEM.
 KEY OVER-RIDE WILL CAUSE DOOR FORCED ALARM IN ACCESS CONTROL SYSTEM
 FREE EGRESS AT ALL TIMES.

 ALLEGIION	ELEVATION DRAWING	
	Drawn By: Jason Relyea DHT, DHC	Checked by:
ELECTRIFIED ELEVATION DRAWINGS	DATE: 03-15-2021 SCALE: N.T.S.	VERSION: 1 REVISION:
		DRAWING NO: 3017

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DOOR ELEVATION
N.T.S.

DOOR HARDWARE

- ① JUNCTION BOX BY OTHERS
- ② SCHLAGE 679-05 DOOR POSITION SWITCH
- ③ VON DUPRIN LX-QEL / FALCON LM-MEL EXIT DEVICE (24 VDC)
- ④ SCHLAGE MT11 OR MT15
- ⑤ SCHLAGE SCANII RX MOTION SENSOR
- ⑥ LCN SENIOR SWING AUTO DOOR OPERATOR
- ⑦ LCN SINGLE GANG BOX WIRED ACTUATORS
- ⑧ VON DUPRIN PS902 X 900-2RS
- ⑨ VON DUPRIN EPT10 OR EQUAL

WIRE REQUIREMENTS


2/20 AWG STRANDED FOR DPS
 4/18 AWG STRANDED FOR EXIT DEVICE
 2 WIRES FOR POWER
 2 WIRES FOR LX / LM SWITCH
 4/18 AWG STRANDED FOR MOTION SENSOR
 2 WIRES FOR POWER
 2 WIRES FOR REQUEST TO EXIT SIGNAL
 2/20 AWG STRANDED FROM INTERIOR ACTUATOR DIRECT TO P6
 2/20 AWG STRANDED FROM EXTERIOR ACTUATOR TO P7. ONE LEG
 TO BE WIRED IN SERIES WITH N/O AUX RELAY CONTACT
 2/20 AWG STRANDED FROM P10 CABLE TO POWER SUPPLY RELAY
 8/22 AWG SHIELDED TO CARD READER. VERIFY
 REQUIREMENTS W/ CARD READER MANUFACTURER.
 PLENUM RATED CABLE FROM ACCESS PANEL TO J-BOX
 INTEGRATOR TO VERIFY REQUIREMENTS AND PROVIDE
 AS REQUIRED FOR SYSTEM DESIGN.
 **ANY WIRE RUNS GREATER THAN 200 FEET VERIFY GAUGE
 WITH MANUFACTURER.**

GENERAL NOTES:

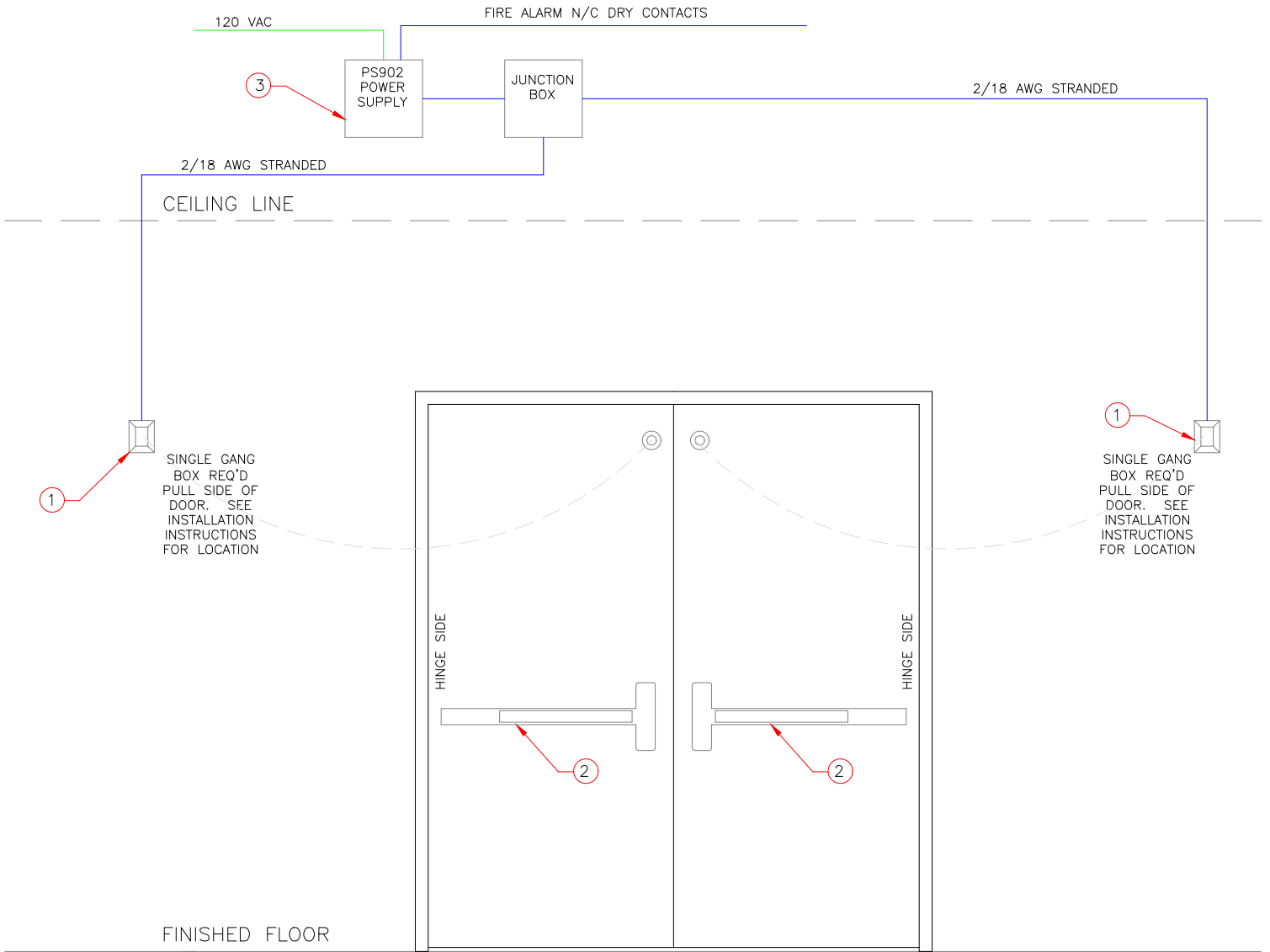
ALL LOW VOLTAGE WIRE TO RUN IN MINIMUM 3/4" CONDUIT OR INSIDE DRYWALL UNLESS NOTED OTHERWISE
 ALL LOW VOLTAGE WIRE TO BE STRANDED WIRE
 ALL GANG BOXES BY ELECTRICAL CONTRACTOR AS REQUIRED
 ALL LOW VOLTAGE WIRING TO BE LABELED CLEARLY AT BOTH END
 ALL MOUNTING HEIGHTS AS SHOWN
 COORDINATE MOUNTING LOCATIONS WITH ELECTRICAL/ARCHITECTURAL PLANS
 ANY DEVIATION FROM HARDWARE SPECIFIED IN SECTION 08710 WILL NEGATE ALL REQUIREMENTS SHOWN
 HEREIN AND REQUIRE NEW DRAWINGS BY OTHERS TO MATCH SUBSTITUTED HARDWARE

OPERATIONAL DESCRIPTION:

DOOR NORMALLY CLOSED AND LOCKED.
 ENTRY BY VALID CREDENTIAL AT CARD READER OR BY KEY OVER-RIDE.
 RX MOTION SENSOR SHUNTS DOOR FORCED OPEN IN ACCESS CONTROL SYSTEM.
 INTERIOR ACTUATOR TO START OPENING CYCLE (UNLESS ADO IS POWERED OFF)
 EXTERIOR ACTUATOR WIRED IN SERIES THROUGH LX SWITCH IN EXIT DEVICE SUCH THAT ON VALID CARD OR TIME ZONE CONTROL
 ACTUATOR CAN BE PRESSED TO START OPENING CYCLE
 KEY OVER-RIDE WILL CAUSE DOOR FORCED EVENT IN ACCESS CONTROL SYSTEM.
 FREE EGRESS AT ALL TIMES.

 ALLEGION ELECTRIFIED ELEVATION DRAWINGS	DRAWING: ELEVATION DRAWING		
	Drawn By: Jason Relyea DHT, DHC	Checked by:	
	DATE: 03-15-2021	VERSION: 1	DRAWING NO: 3157
	SCALE: N.T.S.	REVISION:	

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DOOR HARDWARE

- ① LCN SEM7800 SERIES MAGNETIC HOLD OPEN (12/24VOLT)
- ② FIRE RATED EXIT DEVICES (MAINTAIN POSITIVE LATCHING)

WIRE REQUIREMENTS

2/18 AWG STRANDED FOR EACH MAGNETIC HOLD OPEN


ANY WIRE RUNS GREATER THAN 200 FEET VERIFY GAUGE WITH MANUFACTURER.

GENERAL NOTES:

ALL LOW VOLTAGE WIRE TO RUN IN MINIMUM 3/4" CONDUIT OR INSIDE DRYWALL UNLESS NOTED OTHERWISE
 ALL LOW VOLTAGE WIRE TO BE STRANDED WIRE
 ALL GANG BOXES BY ELECTRICAL CONTRACTOR AS REQUIRED
 ALL LOW VOLTAGE WIRING TO BE LABELED CLEARLY AT BOTH END
 ALL MOUNTING HEIGHTS AS SHOWN
 COORDINATE MOUNTING LOCATIONS WITH ELECTRICAL/ARCHITECTURAL PLANS
 ANY DEVIATION FROM HARDWARE SPECIFIED IN SECTION 08710 WILL NEGATE ALL REQUIREMENTS SHOWN
 HEREIN AND REQUIRE NEW DRAWINGS BY OTHERS TO MATCH SUBSTITUTED HARDWARE

OPERATIONAL DESCRIPTION:

DOORS NORMALLY HELD OPEN
 UPON FIRE ALARM ACTIVATION MAGNETIC HOLDERS TO RELEASE AND DOORS TO BE LATCHED CLOSED. UPON RESET OR FIRE ALARM DOORS TO BE MANUALLY OPENED AND MAGNETIC LOCK ENGAGED.

 ALLEGION ELECTRIFIED ELEVATION DRAWINGS	DRAWING: ELEVATION DRAWING		
	Drawn By: Jason Relyea DHT, DHC	Checked by:	
	DATE: 03-15-2021	VERSION: 1	DRAWING NO: 10009
	SCALE: N.T.S.	REVISION:	

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SECTION 088100 - SOLAR CONTROL COATED GLASS

PART 1 -GENERAL

1.1 SECTION INCLUDES

- A. Double-Glazed Solar Control Insulating Glass Units.

1.2 RELATED SECTIONS

- A. Section 08850 - Glazing Accessories.
- B. Section 8100.13 – Interior Glass Glazing
- C. Section 088113 – Decorative Glass Glazing

1.3 REFERENCES

- A. ANSI Z 97.1 - Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test.
- B. ASTM C 1036 - Standard Specification for Flat Glass.
- C. ASTM C 1048 - Standard Specification for Heat-Treated Flat Glass--Kind HS, Kind FT Coated and Uncoated Glass.
- D. ASTM C 1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Glass.
- E. ASTM E 773 - Standard Test Method for Accelerated Weathering of Sealed Insulating Glass Units.
- F. ASTM E 774 - Standard Specification for the Classification of the Durability of Sealed Insulating Glass Units
- G. ASTM E 2188 – Standard Test Method for Insulating Glass Unit Performance.
- H. ASTM E 2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation.
- I. CPSC 16CFR-1201 - Safety Standard for Architectural Glazing Materials.
- J. Glass Association of North America (GANA) Glazing Manual.

1.4 DEFINITIONS

- A. Sealed Insulating Glass Unit Surfaces:
 - 1. Surface No. 1: Exterior surface of outer lite.
 - 2. Surface No. 2: Interior surface of outer lite.
 - 3. Surface No. 3: Exterior surface of inner lite.
 - 4. Surface No. 4: Interior surface of inner lite.
- B. Airspace: Space between lites of an insulating glass unit that contains dehydrated air or other inert specified gas.

1.5 SUBMITTALS

- A. Comply with Section 01330 - Submittal Procedures.
- B. Product Data: Submit manufacturer's product data, including performance characteristics and installation instructions.

- C. Shop Drawings: Submit manufacturer's or fabricator's shop drawings, including plans, elevations, sections, and details, indicating glass dimensions, tolerances, types, thicknesses, and coatings.
- D. Samples: Submit manufacturer's samples of each type, thickness, and coating.
- E. Fabricator's Certification: Submit fabricator's certification by manufacturer.
- F. Cleaning Instructions: Submit manufacturer's cleaning instructions.
- G. Warranty: Submit manufacturer's standard warranty for sealed insulating glass units.

1.6 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Minimum of 5 years experience manufacturing solar control coated glass.
- B. Fabricator's Qualifications:
 1. Minimum of 5 years experience manufacturing sealed insulating glass units meeting ASTM E 2190, Class CBA.
 2. Certified by manufacturer.
- C. Mock-Ups:
 1. Comply with Section 01450 - Quality Control.
 2. Obtain acceptance of mock-ups by Architect before proceeding with work.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivery:
 1. Deliver glass to site in accordance with manufacturer's instructions.
 2. Deliver glass in manufacturers or fabricator's original containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage:
 1. Store glass in accordance with manufacturer's instructions.
 2. Store glass in clean, dry area indoors.
 3. Protect from exposure to direct sunlight and freezing temperatures.
 4. Apply temporary coverings loosely to allow adequate ventilation.
 5. Protect from contact with corrosive chemicals.
 6. Avoid placement of glass edge on concrete, metal, and other hard objects.
 7. Rest glass on clean, cushioned pads at 1/4-points.
- C. Handling:
 1. Handle glass in accordance with manufacturer's instructions.
 2. Protect glass from damage during handling and installation.
 3. Do not slide 1 lite of glass against another.
 4. Do not use sharp objects near unprotected glass.

PART 2 -PRODUCTS

2.1 MANUFACTURER

- A. Guardian Industries Corp., 14600 Romine Road, Carleton, Michigan 48117. Toll Free (800) 521-9040. Phone (734) 654-6264. Fax (734) 654-0935. Web Sites www.guardian.com, www.sun-guardglass.com.

- B. Substitutions: Subject to compliance with requirement, products of equal performance may be used based on the architect's review of submittals per Section 01 6300" Product Substitution Procedures."

2.2 FABRICATORS

- A. Sealed Insulating Glass Units, Heat-Strengthened Glass, Tempered Glass, and Spandrel Glass:
 - 1. Acceptable Fabricators: Certified by Guardian Industries Corp. to fabricate SunGuard Solar Control Coated Glass products.
- B. Acceptable Fabricators:
 - 1. Glaz-Tech Industries.
 - 2. Old Castle Building Envelope.

2.3 SOLAR CONTROL INSULATING COATED GLASS

- A. Double-Glazed Sputter-Coated Insulating Glass Units for frame all types except as noted in item "C" below:
 - 1. Conformance: ASTM E 2190, Class CBA.
 - 2. Outboard Lite: Sputter-coated clear float glass.
 - a. Annealed Clear Float Glass: ASTM C 1036, Type 1, Class 1, Quality q3.
 - b. Vacuum Deposition Sputtered Coating: ASTM C 1376.
 - c. Coating on Surface No. 2: SunGuard SNX 62/27 (SNX 62/27).
 - d. Glass Thickness: 6 mm (1/4 inch).
 - e. Heat Treatment: Heat-strengthened, ASTM C 1048, Kind HS.
 - 3. Air Space: 12 mm (1/2 inch) wide, hermetically sealed, dehydrated air space.
 - 4. Inboard Lite: Clear float glass.
 - a. Annealed Clear Float Glass: ASTM C 1036, Type 1, Class 1, Quality q3.
 - b. Glass Thickness: 6 mm (1/4 inch).
 - c. Heat-Treatment: Heat-strengthened, ASTM C 1048, Kind HS.
 - 5. Glass Unit Performance Characteristics:
 - a. Visible Light Transmittance: 62 percent
 - b. Visible Light Reflectance Outdoors: 11 percent
 - c. Direct Solar Energy Transmittance: 23 percent
 - d. Direct Solar Energy Reflectance Outdoors: 39 percent
 - e. Winter U-Value Nighttime: 0.28
 - f. Summer U-Value Daytime: 0.27
 - g. Shading Coefficient: 0.31
 - h. Solar Heat Gain Coefficient: 0.27
 - i. Summer Relative Heat Gain: 65
- B. Where Obscure Glazing is specified use composition of fabricated unit above except:
 - 1. Inboard Lite: White laminated glass.
 - a. Class 1, Quality q3.
 - b. Glass Thickness: 6 mm (1/4 inch).
 - c. Heat-Treatment: Heat-strengthened, ASTM C 1048, Kind HS.
- C. All window frames Types B2 shall receive Solar Control Insulating Coated Glass Double-Glazed Sputter-Coated Insulating Glass Units:
 - 1. Conformance: ASTM E 2190, Class CBA.

2. Outboard Lite: Sputter-coated clear float glass.
 - a. Annealed Clear Float Glass: ASTM C 1036, Type 1, Class 1, Quality q3.
 - b. Vacuum Deposition Sputtered Coating: ASTM C 1376.
 - c. Coating on Surface No. 2: SunGard SN68/38 (or approved equal).
 - d. Glass Thickness: 6 mm (1/4 inch).
 - e. Heat Treatment: Heat-strengthened, ASTM C 1048, Kind HS.
3. Air Space: 12 mm (1/2 inch) wide, hermetically sealed, dehydrated air space.
4. Inboard Lite: Clear float glass.
 - a. Annealed Clear Float Glass: ASTM C 1036, Type 1, Class 1, Quality q3.
 - b. Glass Thickness: 6 mm (1/4 inch).
 - c. Heat-Treatment: Heat-strengthened, ASTM C 1048, Kind HS.

PART 3 -EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive glass. Notify Architect of conditions that would adversely affect installation. Do not proceed with installation until unsatisfactory conditions are corrected.

3.2 PREPARATION

- A. Verify glazing openings are correct size and within tolerance.
- B. Verify glazing channels, recesses, and weeps are clean and free of obstructions.

3.3 GLAZING

- A. Install glass in accordance with manufacturer's instructions, except where local codes or GANA Glazing Manual indicate more stringent requirements.

3.4 FIELD QUALITY CONTROL

- A. Coated glass, when viewed from minimum of 10 feet, exhibiting slightly different hue or color not apparent in hand samples, will not be cause of rejection of glass units, as determined by Architect.
- B. Verify glass is free of chips, cracks, and other inclusions that could inhibit structural or aesthetic integrity.

3.5 CLEANING

- A. Clean glass promptly after installation in accordance with manufacturer's instructions.
- B. Remove labels from glass surface.
- C. Do not use harsh cleaning materials or methods that would damage glass.

3.6 PROTECTION

- A. Protect installed glass from damage during construction.
- B. Protect installed glass from contact with contaminating substances resulting from construction operations.
- C. Remove and replace glass that is broken, chipped, cracked, abraded, or damaged in other ways during construction period, including natural causes, accidents, and vandalism.

END OF SECTION 08 8100

SECTION 088100 - INTERIOR GLASS GLAZING

PART 1 -GENERAL

1.1 SUMMARY

- A. Section includes laminated glass and tempered glass units.
- B. Related Sections:
 - 1. Division 02-49 Sections specifying glass and glazing by reference to this Section.
 - 2. Division 06 6116 "Solid Surfacing"
 - 3. Division 07 Section "Joint Sealants" for glazing sealants.
 - 4. Division 08 Section "Decorative Glass Glazing"
 - 5. Division 08 Section "Solar Control Coated Glass"

1.2 REFERENCES

- A. ASTM C 1036 - Standard Specification for Flat Glass.
- B. ASTM C 1172 – Standard Specification for Laminated Architectural Flat Glass.
- C. CPSC 16CFR-1201 - Safety Standard for Architectural Glazing Materials.
- D. GANA Glazing Manual.
- E. GANA Laminated Glazing Reference Manual

1.3 DEFINITIONS

- A. Laminated Glass Unit Surfaces:
 - 1. Surface No. 1: Exterior surface of outer lite.
 - 2. Surface No. 2: Interior surface of outer lite.
 - 3. Surface No. 3: Exterior surface of inner lite.
 - 4. Surface No. 4: Interior surface of inner lite.
- B. Interlayer: Bonding layer of a laminated glass unit that adheres the outer and inner lites together.

1.4 SUBMITTALS

- A. Comply with Division 01 Section "Submittal Procedures."
- B. Product Data: Submit manufacturer's product data, including performance characteristics and installation instructions.
- C. Shop Drawings: Submit manufacturer's or fabricator's shop drawings, including plans, elevations, sections, and details, indicating glass dimensions, tolerances, types, thicknesses, and coatings.
- D. Samples: Submit manufacturer's samples of each type, thickness, and coating.
- E. Fabricator's Certification: Submit fabricator's certification by manufacturer.
- F. Cleaning Instructions: Submit manufacturer's cleaning instructions.
- G. Warranty: Submit manufacturer's standard warranty for sealed insulating glass units.

1.5 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Minimum of 5 years' experience manufacturing laminated and tempered glass.
- B. Fabricator's Qualifications:
 - 1. Minimum of 5 years experience manufacturing Laminated glass units meeting ASTM C 1172 and CPSC 16CFR-1201.
 - 2. Certified by manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery:
 - 1. Deliver glass to site in accordance with manufacturer's instructions.
 - 2. Deliver glass in manufacturer's or fabricator's original containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage:
 - 1. Store glass in accordance with manufacturer's instructions.
 - 2. Store glass in clean, dry area indoors.
 - 3. Protect from exposure to direct sunlight and freezing temperatures.
 - 4. Apply temporary coverings loosely to allow adequate ventilation.
 - 5. Protect from contact with corrosive chemicals.
 - 6. Avoid placement of glass edge on concrete, metal, and other hard objects.
 - 7. Rest glass on clean, cushioned pads at 1/4-points.
- C. Handling:
 - 1. Handle glass in accordance with manufacturer's instructions.
 - 2. Protect glass from damage during handling and installation.
 - 3. Do not slide one lite of glass against another.
 - 4. Do not use sharp objects near unprotected glass.

1.7 WARRANTY

- A. Manufacturer's Special Warranty on Laminated Glass: Manufacturer's standard form in which laminated-glass manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.
 - 1. Warranty Period: 10 years from date of manufacture.

PART 2 -PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Guardian Industries Corp., 14600 Romine Road, Carleton, Michigan 48117. Toll Free (800) 521-9040. Phone (734) 654-6264. Fax (734) 654-0935. Web Sites www.guardian.com, www.sun-guardglass.com.
- B. PPG Industries, 1 PPG Pl Pittsburgh, Pennsylvania 15222, Phone: (888) 774-4332, website: www.ppg.com/corporate/ideascapes

- C. AGC Glass Company, 3515 South 300 West, Salt Lake City, Utah 84115, Phone: (801) 268-2521, Fax: (801) 284-6421, Website: us.agc.com

2.2 FABRICATORS

- A. Laminated Glass Units, Heat-Strengthened Glass, Tempered Glass, and Spandrel Glass:
- B. Acceptable Fabricators: Certified by glass manufacturer including:
1. Glaz-Tech Industries
 2. Old Castle

2.3 LAMINATED GLASS

- A. Reflective-Coated Vision Glass: ASTM C 1376, coated by pyrolytic process, and complying with other requirements specified.
1. Basis-of-Design Product: Subject to compliance with requirements, provide “Mirropane T.M. Transparent Mirror Glass” as manufactured by Pilkington Building Products or comparable product by one of the following:
 - a. PPG
 - b. Guardian Industries
 2. Type: Coated vision glass with mirror coating toward Life Skills and OT/PT room side.
 3. Coating Color: Silver
 4. Glass: ¼ inch tempered.
 5. Visible Light Transmittance: 11 percent minimum.
 6. Visible Reflectance on the Coated Side: 71%
- B. Laminated Glass Units:
1. Conformance: ASTM C 1172 and complying with testing requirements in CPSC 16CFR-1201 for Category II materials.
 2. Outboard Lite: Clear float glass.
 - a. Annealed Clear Float Glass: ASTM C 1036, Type I, Class 1, Quality q3.
 - b. Glass Thickness: 3 mm (1/8 inch).
 - c. Heat Treatment: None
 3. Interlayer: Polyvinyl butyral (PVB) plastic interlayer, clear, 0.030 inch thick.
 4. Inboard Lite: clear float glass.
 - a. Clear Float Glass: ASTM C 1036, Type I, Class 1, Quality q3.
 - b. Glass Thickness: 3 mm (1/8 inch).
 - c. Heat Treatment: None

2.4 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
- B. Fabricate glass to produce glass free of foreign substances and air or glass pockets.

PART 3 -EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive glass. Notify Architect of conditions that would adversely affect installation. Do not proceed with installation until unsatisfactory conditions are corrected.

3.2 PREPARATION

- A. Verify glazing openings are correct size and within tolerance.
- B. Verify glazing channels, recesses, and weeps are clean and free of obstructions.

3.3 GLAZING

- A. Install glass in accordance with manufacturer's instructions, except where local codes or GANA Glazing Manual indicate more stringent requirements.

3.4 FIELD QUALITY CONTROL

- A. Verify glass is free of chips, cracks, and other inclusions that could inhibit structural or aesthetic integrity.

3.5 CLEANING

- A. Clean glass promptly after installation in accordance with manufacturer's instructions.
- B. Remove labels from glass surface.
- C. Do not use harsh cleaning materials or methods that would damage glass.

3.6 PROTECTION

- A. Protect installed glass from damage during construction.
- B. Protect installed glass from contact with contaminating substances resulting from construction operations.
- C. Remove and replace glass that is broken, chipped, cracked, abraded, or damaged in other ways during construction period, including natural causes, accidents, and vandalism.

END OF SECTION

SECTION 09 2100 - GYPSUM BOARD

PART 1 -GENERAL

1.1 RELATED WORK DESCRIBED ELSEWHERE

- A. Cold Formed Metal Framing: Section 05 4000
- B. Rough Carpentry: Section 06 1000
- C. Non-Structural Metal Framing: Section 09 2216
- D. Painting: Section 09 9100
- E. Tiling: Section 09 3000
- F. Tile Setting Materials: Section 09 3113
- G. Textured Coating: Section 09 9400

1.2 DESCRIPTION OF WORK

- A. Types of work include gypsum drywall and gypsum backing boards for application of other finishes including screw-type support systems and drywall finishing (joint tape-and-compound treatments).

1.3 QUALITY ASSURANCE

- A. Gypsum Board Standards: GA-216 by Gypsum Association
- B. Abuse Resistant Gypsum Panels: ASTM D 3273
- C. Metal Support Standard: ASTM C 754
- D. Fire-Resistance Rating: Where gypsum drywall systems with fire-resistance ratings are indicated or are required to comply with governing regulations, provide materials and installations identical with applicable assemblies which have been tested and listed by recognized authorities, including UL and AIA. Comply with FM Approval Guide where applicable.
- E. Manufacturer: Obtain gypsum board products from a single manufacturer or from manufacturers recommended by prime manufacturer of gypsum board.
- F. Allowable Tolerances: 1/8" offsets between planes of board faces and 1/4" in 8'-0" for plumb, level, warp and bow.

1.4 SUBMITTALS

- A. Submit manufacturer's product specifications and installation instructions for each gypsum drywall component, including other data as may be required to show compliance with these specifications.

1.5 PRODUCT HANDLING

- A. Deliver, identify, store and protect gypsum drywall materials to comply with referenced standards.

1.6 JOB CONDITIONS

- A. Environmental conditions shall comply with referenced standards.

PART 2 -PRODUCTS

2.1 GYPSUM BOARD PRODUCTS

- A. Exposed Gypsum Board: Also known as gypsum wallboard. Regular type with tapered long edges. ASTM C 1396, Federal Comp. Spec. SS-L-30d, Type III, Grade R or X, Class 1.
 - 1. Thickness: 5/8" except where otherwise indicated.
 - 2. Sheet Size: 4' x 8' or longer.
 - 3. Type X (Fire Resistive): Provide indicated or required for fire resistive construction.
- B. Gypsum Backing Board: Water-resistant type, with V-groove or square edges, except provide exposed gypsum board with tapered edges where joint treatment is required. ASTM C 1396/C 1396M, Federal Comp. Spec. SS-L-30d, Type VII (Grade W or WX), Class 2.
 - 1. Type X: Provide where indicated (fire-resistive) or as required.
 - 2. Thickness: 5/8" except where otherwise indicated.
 - 3. Sheet Size: 4' x 8' or longer.
- C. Exterior Gypsum Sheathing: 1/2" thickness as manufactured by USG or an approved equal.
- D. Abuse Resistant Gypsum Panels – Scheduled for Multipurpose room #401 and Cafeteria #403: minimum classification levels per ASTM D 3273
 - 1. Abrasion Resistance ASTM C 1629 – Level 2
 - 2. Indentation Resistance ASTM C 1629 – Level 1
 - 3. Soft Body Impact Resistance ASTM C 1629 – Level 2
 - 4. Hard Body Impact Resistance ASTM – C 1629 Amex A.1 – Level 2
 - a. Thickness 5/8"
 - b. Sheet Size: 4'x8' or longer.
- E. Glass-Mat, Water-Resistant Backing Board with Water-Resistant Coating: ASTM C 1178/C 1178M.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Georgia-Pacific Gypsum LLC; "DensShield Tile Backer" or a comparable product by another manufacturer.
 - 2. Core: As indicated on Drawings.
 - 3. Long Edges: Square.
- F. Approved manufacturers of gypsum wallboard per the current UL Fire Resistive Directory are:
 - 1. America Gypsum Co.
 - 2. Continental Gypsum Co.
 - 3. G-P Gypsum Corp.
 - 4. James Hardie Gypsum, Inc.
 - 5. LaFarge Gypsum
 - 6. Standard Gypsum Corp.
 - 7. Temple – Inland Forest Products Corp.
 - 8. Westroc, Inc.

2.2 TRIM ACCESSORIES

- A. Provide manufacturer's standard trim accessories of types indicated for drywall work, formed of galvanized steel unless otherwise indicated, with either knurled and perforated or expanded flanges for nailing or stapling, and beaded for concealment of flanges in joint compound. Provide corner beads, L-type edge trim beads, U-type edge trim beads, special L-kerf type edge trim beads, and one-piece control joint beads.
- B. Semi-Finishing Type: Manufacturer's standard trim units which are not to be finished with joint compound (non-beaded).
- C. Expansion joints shall be provided where the length of uninterrupted gypsum wallboard exceeds 30 feet.

2.3 JOINT TREATMENT MATERIALS

- A. General: ASTM C 475, type as recommended by manufacturer for the application indicated, except as otherwise indicated.
- B. Joint Tape: Perforated type.
- C. Joint Compound: Ready-mixed vinyl-type for interior use. Two separate grades -- one specifically for bedding tapes and filling depressions and one for topping and sanding.

2.4 MISCELLANEOUS MATERIALS

- A. General: Provide auxiliary materials for gypsum drywall work of type and grade recommended by manufacturer of the gypsum board.
- B. Gypsum Board Fasteners: Comply with GA216 and ASTM C646.
- C. Sound Attenuation Blankets: FS HH-I-251, Type I, semi-rigid mineral fiber blanket without membrane, Class 25 flame spread, thickness as indicated.
- D. Concealed Acoustical Sealant: Mastic type, non-shrinking, non-drying, non-migrating and non-staining.
- E. Exposed Acoustical Sealant: Latex, acrylic, or acrylic latex type, permanently elastic and paintable.
- F. Laminating Adhesive: Special adhesive as recommended for laminating gypsum board.

PART 3 -EXECUTION

3.1 PREPARATION FOR METAL SUPPORT SYSTEMS

- A. Ceiling Anchorages: Coordinate work with structural ceiling work to ensure that inserts and other structural anchorage provisions have been installed to receive ceiling hangers.
- B. Furnish concrete inserts, steel deck hanger clips and similar devices to other trades for installation well in advance of time needed for coordination with other work.

3.2 INSTALLATION OF METAL SUPPORT SYSTEMS

- A. Do not bridge building expansion joints with support system, frame both sides of joints with furring and other support as indicated.
- B. Ceiling Support Suspension Systems
 1. Secure hangers to structural support by connecting directly to structure where possible, otherwise connect to inserts, clips or other anchorage devices or fasteners as indicated.
 2. Space main runners 4'-0" o.c. and space hangers 4'-0" o.c. along runners except as otherwise indicated.
 3. Level main runners to a tolerance of 1/4" in 12'-0", measured both lengthwise on each runner and transversely between parallel runners.
 4. Wire tie or clip furring members to main runners and to other structural supports as indicated.
 5. Direct-Hung Metal Support System: Attach perimeter wall track or angle wherever support system meets the vertical surfaces. Mechanically joint support members to each other and butt-cut to fit into wall track.
 - a. Space furring members 24" o.c. except as otherwise indicated.
 - b. Install auxiliary framing at termination of drywall work and at openings for light fixtures and similar work as required for support of both the drywall construction and other work indicated for support thereon.
- C. Wall/Partition Support Systems
 1. Install supplementary framing, blocking and bracing to support fixtures, equipment, services, heavy trim, furnishings and similar work which cannot be adequately supported on gypsum board alone.
 2. Isolate stud system from transfer of structural loading to system, both horizontally and vertically. Provide slip or cushioned type joints to attain lateral support and avoid axial loading.
 3. Install runner tracks at floors, ceilings and structural walls and columns where gypsum drywall stud system abuts other work, except as otherwise indicated.
 4. Extend partition stud system through acoustical ceilings and elsewhere as indicated to structural support or substrate above ceiling.
 5. Space studs 16" o.c., except as otherwise indicated.
 6. Frame door openings with vertical studs securely attached by screws at each jamb either directly to the frames or to jamb anchor clips on the door frame; install runner track sections for jack studs at head and secure to jamb studs.
 - a. Provide runner tracks of same gage as jamb studs. Space jacks studs same as partition studs.
 - b. Install 20 gage studs at each jamb for all doors 2'-8" wide to 4'-0" wide weighing not more than 200 lbs., and for all doors less than 2'-8" wide weighing more than 100 lbs., but not more than 200 lbs.
 - c. Install double 20 gage studs for single doors up to 4'-0" wide, weighing more than 200 lbs. but not more than 300 lbs. Screw attach web of back-to-back studs direct to jamb anchor clips nested between flange of stud.
 7. Frame openings other than door openings in same manner as required for door openings and install framing below sills of openings to match framing required above door heads.

8. Space wall furring members 24" o.c. except as otherwise indicated.
9. Erect thermal insulation vertically and hold in place with two furring members spaced 24" o.c. Except at the exterior corners, securely attach narrow flanges of the furring members to wall with concrete stub nails or power-driven fasteners spaced 24" o.c. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; start from this furring member with 3" wide strip of insulation followed by furring member in normal manner. At interior corners, space second member no more than 12" from corner and cut insulation to fit. Until gypsum board is installed, hold insulation in place with 10" staples fabricated from 18 gage tie wire and inserted through slot in web of member, or by an equally acceptable method.
10. Install supplementary framing, runners, furring, block and bracing at opening and termination in the work and at locations required to support fixtures, equipment, services, heavy trim, furnishings and similar work which cannot be adequately supported directly on the gypsum board alone.
11. Partition Heights: Refer to Drawings for indication of partitions extending through the ceiling and terminating as provided for in the Drawings and for partitions extending through the ceiling to the structure above. Maintain clearances under the structural building members to avoid deflection transfer to studs. Provide extended leg ceiling runners.

3.3 GENERAL GYPSUM BOARD INSTALLATION REQUIREMENTS

- A. Install sound-attenuation blankets as indicated, prior to the gypsum board.
- B. Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 1'-0" in alternate courses of board.
- C. Install wall/partition boards vertically to avoid end-butt joints wherever possible. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs.
- D. Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16" open space between boards. Do not force into place.
- E. Locate either edge or end joints over supports, except in horizontal applications or where intermediate supports or gypsum board back-blocking is provided behind end joints. Position boards so that both tapered edge joints abut, and mill-cut or field-cut end joints abut. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions.
- F. Attach gypsum board to framing and blocking as required for additional support at openings and cutouts.
- G. Cover both faces of steel stud partition framing with gypsum board in concealed spaces (above ceilings, etc.) except in chase walls which are properly braced internally. Except where concealed application is required for sound, fire, air or smoke ratings, coverage may be accomplished with scraps of not less than 18 square feet area, and may be limited to not less than 75% of full coverage.
- H. Isolate perimeter of non-load-bearing drywall partitions at structural abutments. Provide 1/4" to 1/2" space and trim edge with J-type semi-finishing edge trim. Seal the joints with acoustical sealant. Do not fasten drywall directly to stud system runner tracks.

- I. Floating Construction: Where feasible, including where recommended by manufacturer, install gypsum board with floating internal corner construction, unless isolation of the intersecting boards as indicated, unless control or expansion joints are indicated, or unless fire rating is indicated.
- J. Space fasteners in gypsum board in accordance with referenced standards and manufacturer's recommendations, except as otherwise indicated.
- K. Where sound-rated drywall work is indicated, seal work at perimeters, control and expansion joints, openings and penetrations with a continuous bead of acoustical sealant including a bead at both faces of partitions. Comply with manufacturer's recommendations for location of beads and close off sound-flanking paths around or through the work, including sealing partitions above acoustical ceilings.

3.4 METHODS OF GYPSUM DRYWALL APPLICATION

- A. Single-Layer Application: Install exposed gypsum board. On ceilings, apply gypsum board prior to wall/partition board application to the greatest extent possible.
- B. Single-Layer Fastening Methods: Apply gypsum boards to supports as follows. Fasten with screws per manufacturer's requirements and recommendations.
- C. Double-Layer Application: Install gypsum backing board for base layer and exposed gypsum board for face layer. On the partition walls, apply base layer and face layers vertically (parallel) with joints of base layer over supports and face layer joints offset at least 10" with base layer joints.
- D. Double-Layer Fastening Method: Apply base layer of gypsum board and face layer to base layer as follows: Fasten base layers with screws and face layers with adhesive and any required supplementary fasteners.

3.5 INSTALLATION OF DRYWALL TRIM ACCESSORIES

- A. General: Where feasible, use same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports.
- B. Install metal corner beads at external corners of drywall work.
- C. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed and except where plastic trim is indicated. Provide type with face flange to receive joint compound except where semi-finishing type is indicated. Install L-type trim where work is tightly abutted to other work, and install special kerf-type where the other work is kerfed to receive long leg of L-type trim. Install U-type trim where the edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints).
- D. Install J-type semi-finishing trim where indicated and where exterior gypsum board edges are not covered by applied moldings.
- E. Install metal control joint (beaded-type) where indicated.

3.6 INSTALLATION OF DRYWALL FINISHING

- A. General: Apply treatment of gypsum board joints (both directions), flanges of trim accessories, penetrations, fastener beads, surface defects and elsewhere as required to prepare work for decoration. Pre-fill open joints and rounded or beveled edges, using type of compound recommended by the manufacturer.
 - 1. Apply joint tape at joints between gypsum boards, except where a trim accessory is indicated.
 - 2. Apply joint compound in three coats (not including pre-fill of openings in base) and sand between last two coats and after last coat.
- B. Partial Finishing: Omit third coat (if specified) and sanding on concealed drywall work which is indicated for drywall finishing or which requires finishing to achieve fire resistance rating, sound rating, or to act as air or smoke barrier. All drywall to be a light orange peel finish, unless noted to match adjacent surfaces.
- C. Refer to sections in painting, coatings, and wall coverings in Division 9 for decorative finishes to be applied to the drywall work.
- D. Where Textured Coating, Section 09 9400, is scheduled (see sheet A-601) gypsum wallboard must be taped and fasteners spotted with joint compound. Refer to ASTM C-480 and gypsum wallboard manufacturer's literature. Wallboard must have a minimum of a Level 4 Finish. Surface must be free of dust, dirt, and other bond-inhibiting materials. Surface must be primed with appropriate tinted Textured Coating system manufacturer's primer. Apply only to sound and clean, dry, properly prepared, frost-free surfaces. Apply the appropriate tinted Textured Coating system manufacturer's primer uniformly by spray, roller or brush to the prepared dry surface. Allow primer to dry approximately 2-4 hours, depending on ambient conditions.

3.7 PROTECTION OF WORK

- A. Installer shall advise Contractor of required procedures for protecting gypsum drywall work from damage and deterioration during remainder of construction period.

END OF SECTION 09 2100

SECTION 09 2216 – NON-STRUCTURAL METAL FRAMING

PART 1 – GENERAL

1.1 WORK INCLUDED

- A. Light gage metal framing required for interior partitions or ceilings.
- B. Light gage metal furring.

1.2 RELATED SECTIONS

- A. Section 09 21 00: Gypsum Board

1.3 REFERENCES

- A. ASTM A 123: Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- B. ASTM A 525: General Requirements for Steel Sheet, Zinc- Coated (Galvanized) by the Hot-Dip Process.
- C. ASTM C 645: Non-Load (Axial) Bearing Steel Studs, Runners (Track) and Rigid Furring Channels for Screw Application of Gypsum Board.
- D. ASTM C 754: Installation of Steel Framing Members to Receive Screw-Attached Gypsum Wallboard, Backing Board, or water-resistant Backing Board.
- E. GA 203: Installation of Screw-Type Steel Framing Members to Receive Gypsum Board.
- F. Metal Framing Manufacturers Association (MFMA): Guidelines for the Use of Metal Framing.

1.4 SYSTEM DESCRIPTION

- A. Metal stud framing system for interior walls, with interior gypsum board specified in Section 09 21 00.
- B. Fabricate horizontal ceiling and soffit framing to limit finish surface to 1/360 deflection under superimposed dead loads.
- C. Fabricate wall framing to limit finish surface to 1/240 deflection under superimposed dead loads.

1.5 REGULATORY REQUIREMENTS

- A. Fire-Rated Partitions: Listed as labeled by UL. Provide materials and construction, which are identical to those of assemblies whose fire resistance rating has been determined per ASTM E 119.

1.6 SUBMITTALS

- A. Product data from manufacturers for each type of product specified.
- B. Describe method for securing studs to tracks, splicing, and for blocking and reinforcement to framing connections.

1.7 QUALITY ASSURANCE

- A. Perform Work in accordance with GA 203 MFMA and ASTM C 754.
- B. Maintain one copy of each document on site.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.

PART 2 – PRODUCTS

2.1 CEILING SUSPENSION

- A. Main Ceiling Channels: Formed steel; minimum 18 gage (1.2 mm) thick, 3/4 inch (19 mm) deep x 1-1/2 inch (38 mm) high; length as required.
- B. Resilient Channels: Formed steel; minimum 25 gage (0.5 mm) thick; size and length as required, serrated face, hat shaped profile.
- C. Hangers: Galvanized steel of size and type to suit application, to rigidly support ceiling components in place, to deflection limits as indicated.
- D. Lateral Bracing: Formed steel; minimum 16 gage (1.5 mm) thick; size and length as required.
- E. Comply with ASTM C 754.

2.2 METAL WALL FRAMING AND FURRING

- A. Studs: Screw-type, Cee-shaped, ASTM C 645, size and gage as noted per wall types on the drawings; USG CS style, for walls over 10'-0" high use the following:
 - 1. 3 5/8" x 1 5/8" @ 16" O.C. 18ga.
 - 2. 6" x 1 1/4" @ 16" O.C. 22ga.
- B. Runners: Of same material and thickness as studs, bent leg retainer notched to receive studs. Ceiling Runners: With extended leg.
- C. Furring Channels: Formed steel; minimum 25 gage (0.5 mm) thick, 3/8 inch (10 mm) deep x 3/4 inch (19 mm) high; length as required.
- D. Resilient Channels: Formed steel; minimum 25 gage (0.5 mm) thick; size and length as required, serrated face, hat shaped profile. Designed to be mounted with flange in the down position.

- E. Fasteners: GA 203. Self-drilling, self-tapping screws.
- F. Blocking: Eight-inch deep 20 gage studs placed horizontally in wall for attachment of surface applied fixtures, equipment, etc. and Owner furnished items.

PART 3 – EXECUTION

3.1 CEILING SUSPENSION SYSTEM

- A. Install ceiling framing independent of walls, columns, and above ceiling work.
- B. Securely anchor hangers to structural members or embed in structural slab. Space hangers to achieve deflection limits indicated.
- C. Space main carrying channels at maximum 48 inch (1 219 mm) centers, not more than 6 inches (150 mm) from wall surfaces. Lap splice securely.
- D. Securely fix carrying channels to hangers to prevent turning or twisting and to transmit full load to hangers.
- E. Place furring channels perpendicular to carrying channels, not more than 2 inches (50 mm) from perimeter walls, and rigidly secure. Lap splice securely.
- F. Reinforce openings in suspension system, which interrupt main carrying channels or furring channels with lateral channel bracing. Extend bracing minimum 24 inches (600 mm) past each opening.
- G. Laterally brace suspension system.
- H. Level main runners to a tolerance of 1/4" in 12'-0".

3.2 METAL FRAMING ERECTION

- A. Metal Studs: Spaced as indicated on the Drawings, 24 inches o.c. maximum. For non-load (axial) bearing stud systems, comply with ASTM C 754. Provide 25 gage studs for wall framing except as on drawings and as follows.
 - 1. Provide 20 gage studs at each corner of partition framing.
 - 2. Provide 20 gage studs for double studs on each side of framed openings.
- B. Partition Heights: Refer to Drawings for indication of partitions extending to finished ceiling and for partitions extending through the ceiling to the structure above. Maintain clearance under structural building members to avoid deflection transfer to studs. Provide extended leg ceiling runners.
- C. Align stud web openings horizontally.
- D. Secure studs to tracks using crimping or sheet metal screw method. Do not weld.
- E. Stud splicing not permissible.

- F. Fabricate corners using a minimum of three studs
- G. Double stud at wall openings, door and window jambs, not more than 2 inches (50 mm) from each side of openings.
- H. Brace stud-framing system rigid.
- I. Blocking: Screw blocking to studs for support of plumbing fixtures, wall cabinets, toilet accessories, hardware and other wall mounted fixtures.
- J. Coordinate installation of insulation, buck, anchors, blocking, electrical and mechanical work which is to be placed in or behind partition framing. Allow such items to be installed after framing is complete. Offset electrical boxes and other penetrations a minimum of one stud space.

END OF SECTION 09 2216

SECTION 09 3000 - TILE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Tile and Accessories:
 - 1. Glazed ceramic wall tile
 - 2. Antiqued mirror and glass mosaic tile
 - 3. Anodized aluminum edge protection

1.2 RELATED SECTIONS

- A. Section 09 2100 - Gypsum Board
- B. Section 09 3113 - Tile Setting Materials and Accessories
- C. Section 07 9200 - Joint Sealant

1.3 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. ANSI A108.1A - Specifications for Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar.
 - 2. ANSI A108.1B - Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex Portland Cement Mortar.
 - 3. ANSI A108.1C - Specifications for Contractors Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar -or- Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex Portland Cement Mortar.
 - 4. ANSI A108.4 - Specifications for Ceramic Tile Installed with Organic Adhesives or Water-Cleanable Tile Setting Epoxy Adhesive.
 - 5. ANSI A108.5 - Specifications for Ceramic Tile Installed with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar.
 - 6. ANSI A108.6 - Specifications for Ceramic Tile Installed with Chemical-Resistant, Water-Cleanable Tile-Setting and -Grouting Epoxy.
 - 7. ANSI A108.8 - Specifications for Ceramic Tile Installed with Chemical-Resistant Furan Mortar and Grout.
 - 8. ANSI A108.9 - Specifications for Ceramic Tile Installed with Modified Epoxy Emulsion Mortar/Grout.
 - 9. ANSI A108.10 - Specifications for Installation of Grout in Tilework.
 - 10. ANSI A118.1 - Standard Specification for Dry-Set Portland Cement Mortar.
 - 11. ANSI A118.3 - Chemical-Resistant, Water-Cleanable, Tile-Setting and -Grouting Epoxy and Water-Cleanable Tile-Setting Epoxy Adhesive.
 - 12. ANSI A118.4 - Latex-Portland Cement Mortar.
 - 13. ANSI A118.5 - Chemical-Resistant Furan Mortar and Grout.
 - 14. ANSI A118.6 - Standard Ceramic Tile Grouts.
 - 15. ANSI A118.7 - Polymer Modified Cement Grouts
 - 16. ANSI A118.8 - Modified Epoxy Emulsion Mortar/Grout.
 - 17. ANSI A118.9 - Test Methods and Specifications for Cementitious Backer Units
 - 18. ANSI A118.10 - Load bearing, Bonded, Waterproof Membranes for Thinsert Ceramic Tile and Dimensional Stone.
 - 19. ANSI A118.11 - Exterior Grade Plywood (EGP) Latex-Portland Cement Mortar.

20. ANSI A136.1 - Organic Adhesives for Installation of Ceramic Tile.
 21. ANSI A137.1 - Specifications for Ceramic Tile.
- B. ASTM International (ASTM):
1. ASTM C 50 - Standard Practice for Sampling, Sample Preparation, Packaging, and Marking of Lime and Limestone Products.
 2. ASTM C 144 - Standard Specification for Aggregate for Masonry Mortar.
 3. ASTM C 207 - Standard Specification for Hydrated Lime for Masonry Purposes.
 4. ASTM C 241 - Standard Test Method For Abrasion Resistance of Stone Subjected to Foot Traffic.
 5. ASTM C 503 - Standard Specification for Marble Dimension Stone.
 6. ASTM C 615 - Standard Specification for Granite Dimension Stone.
 7. ASTM C 629 - Standard Specification for Slate Dimension Stone.
 8. ASTM C 847 - Standard Specification for Metal Lath.
 9. ASTM C 1028 - Standard Test method for Determining the Static Coefficient of Friction or Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull meter Method.
 10. ASTM D 4397 - Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications.
- C. Tile Council of North America (TCNA): TCA Handbook for Ceramic Tile Installation, Current Edition.

1.4 PERFORMANCE REQUIREMENTS

- A. Static Coefficient of Friction: Tile on walkway surfaces shall be provided with the following values as determined by testing in conformance with ASTM C 1028.
1. Level Surfaces: Minimum of 0.6 (Wet).
 2. Step Treads: Minimum of 0.6 (Wet).
 3. Ramp Surfaces: Minimum of 0.8 (Wet).

1.5 SUBMITTALS

- A. Submit under provisions of Section 01 3300 – Submittal Procedures v 3.1.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
 2. Storage and handling requirements and recommendations.
 3. Installation methods.
- C. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.
- D. Selection Samples: Color charts illustrating full range of colors and patterns.
- E. Selection Samples: Samples of actual tiles for selection.
- F. Not used.
- G. Manufacturer's Certificate:
1. Certify that products meet or exceed specified requirements.
 2. For each shipment, type and composition of tile provide a Master Grade Certificate signed by the manufacturer and the installer certifying that products meet or exceed

the specified requirements of ANSI A137.1.

- H. Maintenance Data: Include recommended cleaning methods, cleaning materials, stain removal methods, and polishes and waxes.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing the work of this section with minimum two years' experience.
- B. Single Source Responsibility: Obtain each type and color of tile from a single source. Obtain each type and color of mortar, adhesive and grout from the same source.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products in manufacturer's unopened packaging until ready for installation.
- B. Protect adhesives and liquid additives from freezing or overheating in accordance with manufacturer's instructions.
- C. Store tile and setting materials on elevated platforms, under cover and in a dry location and protect from contamination, dampness, freezing or overheating.

1.8 ENVIRONMENTAL REQUIREMENTS

- A. Do not install adhesives in an unventilated environment.
- B. Maintain ambient and substrate temperature of 50 degrees F (10 degrees C) during tiling and for a minimum of 7 days after completion.

1.9 EXTRA MATERIALS

- A. Provide for Owner's use a minimum of 2 percent of the primary sizes and colors of tile specified, boxed and clearly labeled.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Daltile, which is located at: 7834 C.F. Hawn Fwy. P. O. Box 170130; Dallas, TX 75217; Toll Free Tel: 800-933-TILE; Tel: 214-398-1411; Fax: 214-309-4584; Email: jamie.ocks rider@daltile.com; Web: www.daltile.com.
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 6300 - Product Substitution Procedures v3.1.

2.2 TILE

- A. General: Provide tile that complies with ANSI A137.1 for types, compositions and other characteristics indicated. Provide tile in the locations and of the types colors and pattern indicated on the Drawings and identified in the Schedule. Tile shall also be provided in accordance with the following:
 - 1. Factory Blending: For tile exhibiting color variations within the ranges selected under Submittal of samples, blend tile in the factory and package so tile taken from one package shows the same range of colors as those taken from other packages.

2. Mounting: For factory mounted tile, provide back or edge mounted tile assemblies as standard with the manufacturer, unless otherwise specified.
 3. Factory Applied Temporary Protective Coatings: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by pre-coating with a continuous film of petroleum paraffin wax applied hot. Do not coat unexposed tile surfaces.
- B. Glazed Ceramic Wall Tile:
1. Product: American Olean - Stone Theory.
 2. Moisture Absorption: Less than 20 percent.
 3. Size and Shape: 6 inches x 18 inches, nominal.
 4. Surface Finish: Unpolished.
 5. Color: to be selected by the Architect from manufacturer's standard colors.
 6. Location: Walls in all Restrooms.
 7. Pattern: Running bond.
- C. Decorative Glass Mosaic Tile:
1. Product: American Olean - Stone Theory Stack Glass and Antique Mirror Mosaic Tile.
 2. Moisture Absorption: Less than 3 percent.
 3. Size and Shape: 12 inches x 24 inches sheet (actual 12 1/4" X 13 15/16").
 4. Surface Finish: Glossy.
 5. Color: to be selected by the Architect from manufacturer's standard colors.
 6. Location: One 12-inch-high course at 4'-0" above finished floor on all Restroom walls.

2.3 TRIM AND ACCESSORIES

- A. Stainless Steel Edge Protection
1. Approved manufacturer
 - a. Basis of Design: Schluter® - Rondec
 - b. Subject to compliance with requirements, products of equal performance may be used based on the architect's review of submittals per Section 01 6300 "Product Substitution Procedures v 3.1."
 2. Furnish Brushed antique bronze anodized aluminum 304 (ABGB) outside corners, connectors, and all components for a complete installation on all outside exposed tile edges. Profile RO 100 ABGB.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that wall surfaces are free of substances which would impair bonding of setting materials, smooth and flat within tolerances specified in ANSI A137.1, and are ready to receive tile.
- B. Verify that sub-floor surfaces are dust-free, and free of substances which would impair bonding of setting materials to sub-floor surfaces, and are smooth and flat within tolerances specified in ANSI A137.1.
- C. Verify that concrete sub-floor surfaces are ready for tile installation by testing for moisture emission rate and alkalinity; obtain instructions if test results are not within limits recommended by tile manufacturer and setting materials manufacturer.

- D. Verify that required floor-mounted utilities are in correct location.

3.2 PREPARATION

- A. Protect surrounding work from damage.
- B. Remove any curing compounds or other contaminants.
- C. Vacuum clean surfaces and damp clean.
- D. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.
- E. Install cementitious backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of dry-set mortar to a feather edge.
- F. Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.

3.3 INSTALLATION - GENERAL

- A. Install tile and grout in accordance with applicable requirements of ANSI A108.1 through A108.13, manufacturer's instructions, and TCA Handbook recommendations.
- B. Lay tile to pattern indicated. Arrange pattern so that a full tile or joint is centered on each wall and that no tile less than 1/2 width is used. Do not interrupt tile pattern through openings.
- C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly.
- D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar, or excess grout.
- E. Form internal angles square.
- F. Install non-ceramic trim in accordance with manufacturer's instructions.
- G. Sound tile after setting. Replace hollow sounding units.
- H. Keep expansion joints free of adhesive or grout. Apply sealant to joints.
- I. Allow tile to set for a minimum of 48 hours prior to grouting.
- J. Grout tile joints. Use standard grout unless otherwise indicated.
- K. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.

3.4 INSTALLATION - FLOORS - MORTAR BED METHODS

- A. Over interior concrete substrates, install in accordance with TCA Handbook Method F111, with cleavage membrane, unless otherwise indicated.
 - 1. Where waterproofing membrane is indicated, with standard grout or no mention of grout type, install in accordance with TCA Handbook Method F121.

2. Where epoxy bond coat and grout are indicated, install in accordance with TCA Handbook Method F132, bonded.
 3. Where epoxy or furan grout is indicated, but not epoxy or furan bond coat, install in accordance with TCA Handbook Method F114, with cleavage membrane.
- B. Cleavage Membrane: Lap edges and ends.
- C. Waterproofing Membrane: Install as specified in ANSI A108.13.
- D. Mortar Bed Thickness: 1-1/4 to 2-inch (32 to 51 mm) maximum, unless otherwise indicated.

3.5 INSTALLATION - SHOWERS WALLS

- A. At tiled shower receptors install in accordance with TCA Handbook Method B415, mortar bed floor, and W244, thin-set over cementitious backer unit walls.
- B. At shower walls install in accordance with TCA Handbook Method B412, over cementitious backer units with waterproofing membrane.
- C. Grout with epoxy grout as specified above.
- D. Seal joints between tile work and other work with sealant specified in Section 07 9000 - Joint Protection.

3.6 INSTALLATION - WALL TILE

- A. Over cementitious backer units on studs, install in accordance with TCA Handbook Method W244, using membrane at toilet rooms.
- B. Over cementitious backer units install in accordance with TCA Handbook Method W223, organic adhesive.
- C. Over gypsum wallboard on wood or metal studs install in accordance with TCA Handbook Method W243, thin-set with dry-set or latex-portland cement bond coat, unless otherwise indicated.
1. Where mortar bed is indicated, install in accordance with TCA Handbook Method W222, one coat method.
 2. Where waterproofing membrane is indicated other than at showers and bathtub walls, install in accordance with TCA Handbook Method W222, one coat method.

3.7 CLEANING

- A. Clean tile and grout surfaces.

END OF SECTION 09 3000

3.9 PROTECTION OF FINISHED WORK

- A. Do not permit traffic over finished floor surface for 72 hours after installation.
- B. Cover floors with kraft paper and protect from dirt and residue from other trades.
- C. Where floor will be exposed for prolonged periods cover with plywood or other similar type walkways

END OF SECTION 09 3000

SECTION 09 3113 - TILE SETTING MATERIALS

PART 1 -GENERAL

1.1 SECTION INCLUDES

- A. Setting materials, grouting materials and methods of installation for ceramic tile and dimension stone.

1.2 RELATED SECTIONS

- A. Section 03 3000 - Cast-In-Place Concrete.
- B. Section 09 2100 - Gypsum Board.
- C. Section 09 2216 - Non-Structural Metal Framing.
- D. Section 09 3000 - Tile

1.3 REFERENCES

- A. ANSI A108 - American National Standard Specifications for Installation of Ceramic Tile.
- B. ANSI A108.01 General Requirements: Subsurfaces and Preparations by Other Trades.
- C. ANSI A108.02 General Requirements: Materials, Environmental, and Workmanship.
- D. ANSI A108.1A Installation of Ceramic Tile in the Wet Set Method with Portland Cement Mortar.
- E. ANSI A108.1B Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland cement Mortar.
- F. ANSI A108.5 Installation of Ceramic Tile with Dry-Set Portland cement Mortar or Latex-Portland Cement Mortar.
- G. ANSI A108.6 Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile Setting and Grouting Epoxy.
- H. ANSI A108.10 Installation of Grout in Tilework.
- I. ANSI A108.11 Specifications for the Installation of Interior Cementitious Backer Units.
- J. ANSI A108.13 Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone.
- K. ANSI A108.14 Installation of Paper-Faced Glass Mosaic Tile.
- L. ANSI A108.15 Alternate Method: Installation of Paper-Faced Glass Mosaic Tile.
- M. ANSI A108.16 Installation of Paper-Faced, Back-Mounted, Edge Mounted, or Clear Film Face-Mounted Glass Mosaic Tile.
- N. ANSI A108.17 Installation of Crack Isolation Membranes.
- O. ANSI A118.1 Specifications for Dry-Set Portland Cement Mortar.
- P. ANSI A118.3 Specifications for Chemical Resistant, Water Cleanable Tile Setting and Grouting Epoxy.
- Q. ANSI A118.4 Specifications for Latex-Portland Cement Mortar.
- R. ANSI A118.6 Specifications for Ceramic Tile Grouts.
- S. ANSI A118.7 Specifications for Polymer Modified Ceramic Tile Grouts.

- T. ANSI A118.9 Specifications for Test Methods and Specifications for Cementitious Backer Units.
- U. ANSI A118.10 Specifications for Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile And Dimension Stone Installations.
- V. ANSI A118.12 Specifications for Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installations.
- W. ANSI A118.13 Specification for Bonded Sound Reduction Membranes for Thin-Set Ceramic Tile Installation.
- X. ANSI A118.15 Specifications for Improved Modified Dry-Set Cement and Mortar.
- Y. TCNA 2012 "Handbook for Ceramic Tile Installation"; Tile Council of America Method current edition.
- Z. U.S. Product Standard PS-1 for Construction and Industrial Plywood.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 3000.
- B. Product Data for Mortars, Grouts, and Adhesives:
 1. Submit manufacturer's product data demonstrating compliance with specified requirements.
 2. Submit manufacturer's instructions for use.
 3. Submit manufacturer's certification that materials are suitable for intended use.
- C. Samples: Submit samples of each type and color of grouting material and tile.

1.5 QUALITY ASSURANCE

- A. Mock-ups: Provide mock-up panel using materials specified for final work. Construct mock-up as directed, and of full thickness. Obtain Architect's acceptance of visual qualities of the sample panel.
- B. Installer Qualifications: Engage an experienced installer who has completed tile installations similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- C. Source Limitations for Tile: Obtain each color, grade, finish, type, composition, and variety of tile from one source with resources to provide products from the same production run for each contiguous area of consistent quality in appearance and physical properties without delaying the Work.
- D. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.
- E. Source Limitations for Other Products: Obtain each of the following products specified in this Section from one source and by a single manufacturer for each product.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Provide heated and dry storage facilities on site.
- B. Deliver and store all materials on site a minimum of 24 hours before usage.
- C. Deliver and store tile and packaged materials in original containers with seals unbroken and labels intact until time of use. Prevent damage to materials such as chipping, breakage, freezing, or excessive heat. Prevent contamination by water, moisture, foreign matter, or other causes.

1.7 PROJECT CONDITIONS

- A. Maintain ambient and surface temperatures at not less than 60 degrees F during installation of cementitious materials and for 72 hours thereafter. Maintain ambient and surface temperatures between 65 degrees F and 95 degrees F during installation of epoxy setting and grouting materials and for 72 hours thereafter.
- B. Vent temporary heaters to outside to avoid carbon dioxide damage to new tile work.
- C. Provide adequate lighting for good grouting and clean-up.

PART 2 -PRODUCTS

2.1 TILE

- A. Tile: As scheduled. See Section 09 3000

2.2 SETTING MATERIAL MANUFACTURER

- A. Basis of Design: Merkrete, by Parex USA, Inc., 4125 E. La Palma Ave., Suite 250, Anaheim, CA 92807. Contact: Andy Townes (866.516.0061) andy.townes@parexusa.com, or Technical Support (800-224-2626).
- B. Custom Building Products www.custombuildingproducts.com. Contact: Dale Roberts (951.255.0243) dalero@cbpmail.net.
- C. Laticrete www.laticrete.com
- D. Subject to compliance with requirements, products of equal performance may be used based on the Architect's review of submittals per Section 01 6300 "Product Substitution Procedures."

2.3 JOINT AND SKIM COAT MATERIALS (FOR CEMENTITIOUS BACKER UNITS)

- A. Latex-Portland cement Mortar; ANSI A118.4:
 - 1. Thin-Set 750 RS: a fast setting, polymer modified Portland cement thin set mortar designed to provide flexibility, strength, and rapid set times for the installation of porcelain tile, ceramic tile and natural stone to walls or floors. Suitable for both interior & exterior applications.

2.4 LEVELING MATERIALS

- A. Self Leveling Underlayment (Cementitious):
 - 1. SLU Primer: a concentrated, solvent free acrylic primer and admixture used for the application of self-leveling underlayments to increase bond strength and inhibit rapid water loss during cure.

2.5 CRACK ISOLATION MEMBRANE

- A. Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installations, A118.12. Required over all substrates.
 - 1. FractureGuard 5000: a low VOC, single-component, thin mil, modified latex, elastomeric, mold resistant crack isolation membrane that provides superior elongation to inhibit the transfer of shrinkage and non-structural substrate cracks to the finished.
 - 2. HydroGuard 2000: a commercial grade, heavy duty, thin mil, load bearing, fluid-applied, fabric reinforced, elastomeric positive-side waterproofing & crack isolation membrane with exceptional elongation and high strength properties to inhibit reflective cracking. Conforms to any form or irregular shape (i.e., base flashings, parapets, drains, trenches, etc.). Required in any wet areas or areas that may be exposed to moisture.

2.6 WATERPROOF MEMBRANE

- A. Load Bearing, Bonded, Waterproof Membrane for Thin-Set Ceramic Tile and Dimension Stone Installations; ANSI A118.10:
 - 1. BFP Membrane System: a high-performance, 100% waterproof, thin mil, trowel-applied, fabric-reinforced, heavy-duty elastomeric positive-side waterproofing and crack isolation membrane designed for use in high use commercial environments and over occupied spaces. Easily conforms to any form or irregular shape.

2.7 SETTING MATERIALS

- A. Portland cement Mortar, ANSI A108.1:
 - 1. Wall Mud: scratch and brown leveling coat, must be gauged with 150 Acrylic Latex admixture.
 - 2. Underlay C: a trowel-applied, professional grade Portland cement based leveling floor underlayment for leveling from 1/8 inch to 3 inch depth.
 - a. 626 Primer: a concentrated, solvent free acrylic primer and admixture used for the application of leveling underlayments to equalize uneven suction and ensure adequate bond.
- B. Latex-Portland cement Mortar ANSI A118.15.
 - 1. 855 XXL One Step Adhesive: one step, polymer modified, Portland cement setting adhesive for installation of extra large format porcelain and ceramic tiles and natural stone with irregular thicknesses. Can be used for thin or medium bed applications, walls and floors, interior and exterior. Eliminates the need for back buttering.

2.8 GROUTING MATERIALS

- A. Water Cleanable Tile Setting and Grouting Epoxy; ANSI A118.3: For use in all areas.
 - 1. ProEpoxy: a 100% solids, non-porous, high strength, epoxy grout and mortar for heavy duty performance. Color selected by the architect from the manufacturer's standard color line.

PART 3 -EXECUTION

3.1 EXAMINATION

- A. Before work commences, examine the areas to be covered and report any flaw or adverse condition in writing. Do not proceed with the tile work until surfaces and conditions comply with the requirements indicated in the manufacturer's instructions and in ANSI A108.5
- B. Verify that slope, when required, is in subfloor.
- C. Protect adjoining work surfaces before tile work begins.

3.2 PREPARATION:

- A. Floor Flatness: Install leveling material if necessary to bring floors to required flatness. Maximum variation from plane:
 - 1. 1/4 inch in 10 feet for installations with a thick mortar bed.
 - 2. 1/8 inch in 10 feet for thin-set mortar or any tile with one side greater than 15" in length.
 - 3. Leveling, when necessary, is to be accomplished using leveling materials specified in Part 2.
- B. Verify that plywood substrates conform to the following:

1. Limit plywood surfaces to interior floor applications only.
 2. 2 layers of 5/8 inch (minimum) veneer core plywood, APA grade marked Exterior Grade, Group 1, Type C/C or better and complying with U. S. Product Standard PS-1.
 3. Joists shall be a minimum of 16 inches o.c.
 4. Assembly: Underlayment placed at right angles to the subfloor and the joints of the two layers staggered. Underlayment screwed 6 inches o.c. around the perimeter and 8 inches o.c. throughout the body of each sheet in each direction. Deflection not greater than 1/360 of the span.
 5. Installed with 1/4 inch (6 mm) wide gaps between panels and between panels and walls or other restraining abutments. If installed without a 1/4 inch (6 mm) gap between panels, joints shall be opened by cutting the underlayment to its full depth to provide a gap for expansion. This gap shall remain empty after the installation is complete.
 6. Dry and free of contaminants such as sealers, cleaning compounds, coatings, oil, dust, dirt, etc. Contaminated surfaces shall be cleaned by sanding to expose raw wood.
- C. Verify that cementitious backer units are installed in conformance with the following:
1. ANSI A108.11, the TCNA Handbook Methods, and the manufacturer's recommendations.
 2. Installation temperature: Temperature within the structure is above 55 degrees F.
 3. Fasteners: Wood Studs: Use conventional 1-1/2 inch galvanized roofing nails, preferably screw type, spaced a maximum of 8 inches apart; Steel studs: Use 1-1/4 inch S-12(TM), Flat Wafer Head Screws with countersinking ribs and Climaseal(TM) finish spaced a maximum of 8 inches apart.
 4. Where two panels abut on a stud: A 3/4 inch round countersunk stainless steel washer slipped over fasteners in the joint between two panels so that the washer securely catches the edge of both panels.
 5. Joints: All horizontal and vertical joints and corners including joints with dissimilar materials: gap approximately 1/8 inch to 3/16 inch.
 6. Surface: Plumb and true within 1/8 inch in 8 feet.

3.3 INSTALLATION - GENERAL

- A. Comply with applicable ANSI 108 series of the "American National Standard Specifications for the Installation of Ceramic Tile."
- B. Comply with current TCNA installation methods for locations as follows:
 1. Restroom/ Shower 305 – Shower Receptor: TCNA B414-13 with waterproof membrane.
 2. Food Service 405, Women 405A, Custodial/ Laundry 405B, Dry Storage 405C, Ware Washing 405D, Food Serving 405E, Office 405F, Cooking 405G, Hall 405H, Hall 405J, Lockers 405K, and Restroom/ Shower 305 (except Shower Receptor above): TCNA FE 131-13 with epoxy grout and mortar to meet ANSI A118.3, install per ANSI A108.1c.
 3. All other areas scheduled to receive wall tile: TCNA W245-13.
 4. Rest Rooms 104, 201A, 202A, 203A, 204A, Men 122, Women 120, Girls' 501, Boys' 503, Restroom 505, and Women 507 tile floors: TCNA F113-13.
 5. Girls' 601, Boys' 603, Restroom 605, Men 607 tile floors: TCNA F113A-13.
- C. Coverage and Terminations: Extend tile work into recesses and under or behind equipment and fixtures, to form a complete covering without interruptions, except as otherwise shown.
- D. Intersections and Returns: Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish or built-in items for straight aligned joints.
- E. Jointing Pattern: Unless otherwise shown, lay tile in grid pattern. Align joints when adjoining floor tile with tile, base, or trim on walls when wall tile, base or trim are same size. Layout tile

work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise shown.

- F. Expansion Joints: Locate expansion joints and other sealant filled joints, including control, contraction and isolation joints, where indicated, or if not indicated, at spacing and locations recommended by EJ 171 in the TCNA "Handbook for Ceramic Tile Installation", and approved by Architect.
 - 1. Prepare joints and apply sealants to comply with referenced installation standards and sealant manufacturer's instructions.
- G. Cementitious Backer Units: Prepare cementitious backer units complying with the following:
 - 1. Solidly fill gaps between panels with joint material indicated. A 2 inch wide fiber glass mesh tape shall then be embedded in skim coat of the same mortar over the joints and in the corners. Apply skim coat material indicated to bring wall to acceptable tolerances. Do not exceed manufacturer's recommended thickness of materials.
 - 2. Allow material to cure as per manufacturer's directions before application of additional materials.
- H. Crack Isolation Membrane: Install membrane, where required, to comply with manufacturer's instructions.
- I. Waterproof Membrane: Install waterproof membrane, where required, to comply with manufacturer's instructions. For use in any wet areas.
 - 1. Manufacturer's Instructions: Install proprietary components to comply with manufacturer's instructions.
- J. Install tile to comply with referenced TCNA and ANSI installation standards, using setting materials indicated.
- K. Curing set tile:
 - 1. 72 hours before grouting when the temperature is low or the humidity is high.
 - 2. 48 hours before grouting when hot, dry conditions exist.
 - 3. Check the bond strength carefully before grouting.
- L. Grout the tile to comply with referenced installation standards using grouting materials indicated.
 - 1. Chemical Resistant, Water Cleanable Grouting Epoxy; ANSI A108.6
- M. Center and balance areas of tile.
- N. An excess amount of cuts shall not be made. No cuts smaller than half size should be made. Make all cuts on the outer edges of the field.
- O. Smooth cut edges. Install tile without jagged or flaked edges.

3.4 CLEANING AND PROTECTION

- A. Upon completion of setting and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
- B. Acid Cleaning: Tile may be cleaned with sulfamic acid solutions complying with the following:
 - 1. Only if permitted by tile and grout manufacturer's printed instructions.
 - 2. No sooner than 14 days after installation.
 - 3. Protect metal surfaces, cast iron and vitreous plumbing fixtures from effects of acid cleaning.
 - 4. Flush surface with clean water before and after cleaning.
 - 5. Do not clean Chemical Resistant, Water Cleanable Grouting Epoxy (A118.3) with acid.

- C. Protection: When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with Kraft paper or other heavy covering during construction period to prevent staining damage and wear.
 - 1. Protective Coatings: Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.
- D. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, or otherwise defective tile work.
- E. Protect tile installation from traffic as specified in ANSI specifications.
- F. Protect tile installation from traffic according to manufacturer's instructions.

END OF SECTION 09 3113

SECTION 09 5323 – SUSPENDED ACOUSTICAL CEILING SYSTEMS

PART 1 – GENERAL

1.1 WORK INCLUDED

- A. Suspended metal grid ceiling system and perimeter trim.
- B. Acoustical ceiling panels.
- C. Drywall furring system.

1.2 RELATED WORK DESCRIBED ELSEWHERE

- A. Metal Decking: Section 05 3000
- B. Non-structural Metal Framing: Section 09 2216

1.3 REFERENCES

- A. ASTM C 635: Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
- B. ASTM C 636: Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
- C. ASTM E 580: Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint.
- D. ASTM E 1264: Classification of Acoustical Ceiling Products.

1.4 SUBMITTALS

- A. Product Data: Manufacturer's product specification and installation instructions for each acoustical ceiling material required and for each suspension system, including certified laboratory test reports and other data as required to show compliance with these specifications.
- B. Samples: Submit two samples 12 x 12 inch (305 x 305 mm) in size illustrating material and finish of acoustical units.
- C. Samples: Submit two samples each of suspension system main runner, cross runner, and edge trim.
- D. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

1.5 REGULATORY REQUIREMENTS

- A. Provide seismic bracing as required by the current edition of the International Building Code.

1.6 ENVIRONMENTAL CONDITIONS

- A. Do not install acoustical ceilings until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead mechanical work is completed, tested, and approved.
- B. Maintain uniform temperature of minimum 60° F (16° C), and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.
- C. Permit wet work to dry prior to commencement of installation.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver acoustical units in original, unopened packages and store them where they will be protected against damage from moisture, direct sunlight, or surface contamination.
- B. Handle acoustical ceiling units carefully to avoid chipping edges or damaging units in any way.

1.8 EXTRA MATERIALS

- A. Provide 5 percent of total acoustical unit area of extra panels to Owner.

PART 2 – PRODUCTS

2.1 BASIS OF DESIGN: USG Interiors, Inc.

2.2 SUSPENSION SYSTEM

- A. Design based on products by USG Interiors, Inc., Series: Donn DX/DXL SQ. Exposed Tee Grid.
- B. Grid Materials: Commercial quality cold rolled steel with galvanized coating.
- C. Exposed Grid Surface Width: 15/16” flush fit and center protusion.
- D. Grid Finish: White to match acoustical panels.
- E. Accessories: Stabilizer bars, clips, splices, edge moldings, hold down clips, required for suspended grid system.
- F. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.

2.3 ACOUSTICAL PANELS

- A. Acoustical Panels: ASTM E 1264, Type III, conforming to the following; as located on drawings:
 - 1. SHEETROCK® Brand Radar ClimaPlus™ # 2410
 - a. Size: 24 x 48 inches
 - b. Thickness: 3/4 inches
 - c. Composition: Mineral Fiber
 - d. Light Reflectance: Minimum LR 0.83
 - e. NRC Range: .55
 - f. CSTC Range: Minimum 35

- g. Edge: Angled Tegular
- h. Surface Color: White
- i. Surface Finish: Factory applied latex paint
- j. Location: See drawing Sheet A-601, designation: ACT

- 2. SHEETROCK® Brand ClimaPlus™ Vinyl # 3270.
 - a. Size: 24 x 48 inches
 - b. Thickness: 5/8"
 - c. Location: See drawing Sheet A-601, designation ACT –2

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Install acoustical ceiling true to lines and levels and free from warped, soiled, or damaged grid or panels. Install ceiling system in a manner capable of supporting all superimposed loads, with a maximum deflection of 1/360. Support system at each corner of lighting fixture regardless of the location of adjacent hangers.
- B. Install suspension in accordance with ASTM C 636.
- C. Install system in accordance with ASTM E 580.
- D. Lay out system to a balanced grid design with edge units no less than 50 percent of acoustical unit size.
- E. Install after major above ceiling work is complete. Coordinate the location of hangers with other work.
- F. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- G. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- H. Do not eccentrically load system or produce rotation of runners.
- I. Install edge molding at intersection of ceiling and vertical surfaces, using longest practical lengths. Miter corners. Provide edge moldings at junctions with other interruptions.
- J. Provide seismic bracing as required.
- K. Install hold-down clips to retain panels tight to grid system within 10 ft. (3 m) of an exterior door.

3.2 ADJUST AND CLEAN

- A. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members; comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace work which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 5323

SECTION 09 5426 – SUSPENDED WOOD GRILLE CEILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general conditions of Contract, including General and Supplementary Conditions and Divisions-1 Specification sections apply to work of this section

1.2 SUMMARY

A. Section Includes

1. Solid Wood and Wood veneer ceiling panels
2. Ceiling panel suspension system
3. Wire hangers, fasteners, main runners, wall angle moldings and accessories.

B. Related Sections:

1. Section 09 21 00 - Gypsum Board
5. Division 23 - HVAC
6. Division 26 - Electrical

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM):

- 1) ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability
- 2) ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire
- 3) ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process
- 4) ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
- 5) ASTM C 635 Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
- 6) ASTM C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels
- 7) ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials

8) ASTM E 580 Installation of Metal Suspension Systems in Areas Requiring Moderate Seismic Restraint

9) ASTM E 1264 Classification for Acoustical Ceiling Products

B. Hardwood Plywood & Veneer Association (HPVA)

C. International Building Code

D. ASHRAE Standard 62.1-2004 Ventilation for Acceptable Indoor Air Quality

E. NFPA 70 National Electrical Code

F. ASCE 7 American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures

G. International Code Council-Evaluation Services - AC 156 Acceptance Criteria for Seismic Qualification Testing of Non-structural Components

H. International Code Council-Evaluation Services Report - Seismic Engineer Report

1. ESR 1308 - Armstrong T-Bar or Dimensional Suspension

I. California Air Resources Board (CARB) compliant

J. LEED - Leadership in Energy and Environmental Design is a set of rating systems for the design, construction, operation, and maintenance of green buildings

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each type of ceiling unit and suspension system required.

B. Installation Instructions: Submit manufacturer's installation instructions as referenced in Part 3, Installation.

C. Samples: Minimum 5-1/2 inch samples of specified panel; 8-inch-long samples of exposed wall molding and suspension system, including main runner.

D. Shop Drawings: Illustrating the layout and details of the ceilings. Show locations of items that are to be coordinated with or supported by the ceilings.

E. Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards.

F. All products not conforming to manufacturer's current published values must be removed and dispose. Replace with complying product at the expense of the Contractor performing the work.

1.5 QUALITY ASSURANCE

A. Single-Source Responsibility: Provide ceiling panel units and grid components by a single manufacturer.

B. Fire Performance Characteristics: Identify ceiling components with appropriate markings of applicable testing and inspecting organization.

1. Surface Burning Characteristics: As follows, tested by HPVA (Hardwood Plywood and Veneer Association) under the test standard ASTM E-84 tunnel test and complying with ASTM E 1264 for Class A products.

a. Flame Spread: 25 or less

b. Smoke Developed: 50 or less

C. Woodworking Standards: Manufacturer must comply with specified provisions of Architectural Woodworking Institute quality standards.

D. Woodworks Panels: As with other architectural features located at the ceiling, may obstruct or skew the planned fire sprinkler water distribution pattern through possibly delay or accelerate the activation of the sprinkler or fire detection systems by channeling heat from a fire either toward or away from the device. Designers and installers are advised to consult a fire protection engineer, NFPA 13, or their local codes for guidance where automatic fire detection and suppression systems are present.

E. Coordination of Work: Coordinate ceiling work with installers of related work including, but not limited to building insulation, wet work i.e. gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.

1.6 DELIVERY, STORAGE AND HANDLING

A. Store the wood veneer ceiling panels in a dry interior location in their cartons prior to installation to avoid damage. Store the ceiling panel cartons in a flat, horizontal position. Do not remove the protectors between the panels until installation.

B. Do not store in unconditioned spaces with humidity greater than 55 percent or lower than 25 percent relative humidity and temperatures lower than 50 degrees F or greater than 86 degrees F. Do not expose the wood veneer ceiling panels to extreme temperatures, for example, close to a heating source or near a window with direct sunlight.

C. Handle ceiling units carefully to avoid chipped edges or damage to units in any way.

1.7 PROJECT CONDITIONS

A. Prior to installation, the wood veneer ceiling materials are required to reach room temperature and have stabilized moisture content for a minimum of 72 hours.

B. Do not install the wood veneer panels in spaces where the temperature or humidity conditions vary greatly from the temperatures and conditions that will be normal in the occupied space.

C. As interior finish products, the wood veneer panels are designed for installation in temperature conditions between 50 degrees F and 86 degrees F, in spaces where the building is enclosed, and HVAC systems are functioning and will be in continuous operation. Relative humidity should not fall below 25 percent or exceed 55 percent.

1.8 WARRANTY

A. Wood Veneer Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace panels that fail within the warranty period. Failures include, but are not limited to:

1. Ceiling Panels: Defects in materials or factory workmanship
2. Grid System: Rusting and manufacturing defects

B. Warranty Period:

1. Wood veneer panels: Two (2) years from date of installation
2. Grid: Two (2) years from date of installation

C. The Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

1.9 MAINTENANCE

A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.

1. Ceiling Units: Furnish quantity of full-size units equal to 5.0 percent of amount installed.

2. Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 2.0 percent of amount installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

Basis of design: Armstrong WOODWORKS Channeled planks

A. Ceiling Panels:

1. Armstrong World Industries, Inc.

B. Suspension Systems:

1. Armstrong World Industries, Inc.

2.2.1 WOOD VENEER CEILING UNITS

A. Ceiling Panels Type AP:

1. Surface Texture: Smooth
2. Composition: Fire-retardant Medium Density Fiberboard
3. Species/Finish: Natural Variations Light Cherry
4. Size: 5.553" x 96"
5. Reveal: Square Tongue & Groove 15/16"
6. Profile: 15/16"
7. Sabin: N/A
8. Edge Banding and Trim: To match face veneer
9. Noise Reduction Coefficient (NRC): ASTM C 423, Classified with UL label on product carton 0.70
10. Flame Spread: ASTM E84 HPVA Fire Classification (Fire Class)
11. Dimensional Stability: Standard
12. Acceptable Product: WOODWORKS Channeled Plank, Item # 5900CW7 as manufactured by Armstrong World Industries

B. Ceiling Accessories (Ceilings) Woodworks:

1. 5823 - BioAcoustic Infill Panel (Black - Matte)

2.3.1 METAL SUSPENSION SYSTEMS

A. Components:

Main beams and cross tees, base metal and end detail, fabricated from commercial quality hot dipped galvanized steel complying with ASTM A 653. Main beams and cross tees are double-web steel construction with type exposed flange design. Exposed surfaces chemically cleansed, capping prefinished galvanized steel in baked polyester paint. Main beams and cross tees shall have rotary stitching.

a. Structural Classification: ASTM C 635 Heavy Duty.

b. Color: Black and match the actual color of the selected ceiling tile, unless noted otherwise.

c. Acceptable Product: PRELUDE XL 15/16" Exposed Tee as manufactured by Armstrong World Industries

B. Attachment Devices:

Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.

C. Wire for Hangers and Ties:

ASTM A 641, Class 1 zinc coating, soft annealed, with a yield stress load of at least time three design load, but not less than 12 gauge.

D. Wood Works Edge Moldings and Trim: as required for complete installation in location(s) as shown on drawings.

E. Woodworks Suspension Accessories: as required for complete installation in location(s) as shown on drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out.

B. Proper designs for both supply air and return air, maintenance of the HVAC filters and building interior space are essential to minimize soiling. Before starting the HVAC system, make sure supply air is properly filtered and the building interior is free of construction dust.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less than half width units at borders and comply with reflected ceiling plans. Coordinate panel layout with mechanical and electrical fixtures.

3.3 INSTALLATION

A. Install suspension system and panels in compliance with ASTM C636; CISCA Seismic Guidelines; approved construction drawings; with the authorities having jurisdiction; and in accordance with the manufacturer's installation instructions.

B. Install wall moldings at intersection of suspended ceiling and vertical surfaces.

3.4 ADJUSTING AND CLEANING

A. Replace damaged and broken panels.

B. Clean exposed surfaces of ceilings panels, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 09 6240-RESILIENT ATHLETIC SURFACING

PART 1 – GENERAL

1.1 RELATED WORKS

- A. Cast-In-Place Concrete Section 03 3000
- B. Water vapor membrane shall be as per ASTM E1745.
- C. Preparation to provide a smooth densely finished highly compacted substrate with a tolerance of 1/8” in a 10-foot radius. FF and FL numbers are not recognized.
- D. No concrete sealers or curing compounds are to be apply or mix with the concrete substrate.

1.2 DESCRIPTION

- A. Scope: The complete installation of an 8mm prefabricated rubber sports surfacing, triple durometer vulcanized and calendared with a smooth mat finish including adhesive and striping.

1.3 QUALITY ASSURANCE

- A. The manufacturer to be a firm experienced in the manufacturing of prefabricated rubber sport flooring.
- B. Installer must have successfully completed installations of the same scale in the last three years.
- C. Installer to be recognized and approved by the rubber sport flooring manufacturer.

1.4 SUBMITTALS

- A. Sample of the actual rubber sport flooring in the standard color(s) selected.
- B. Technical data sheets of the product.
- C. Adhesive product data sheets and manufacturer’s certificate indicating approval for the proposed application.
- D. Line paint data sheets and the manufacturer’s certificate indicating approval for the proposed application.

1.5 MAINTENANCE

- A. Submit three (3) copies of the maintenance instructions.
- B. Provide to the owner additional amounts of flooring representing 2% of the total surface of each types and color.
- C. Maintenance material must be from the same dye lot.

1.6 DELIVERY AND STORAGE

- A. Deliver and store the material in the original packaging with the labels intact in a controlled environment of a minimum temperature of 55°F (13°C) and less than 50% relative humidity. Protect work until accepted by owner.

1.7 SITE CONDITIONS (GENERAL CONTRACTOR):

- A. Maintain a stable room and subfloor temperature, minimum 65°F (18°C), for a period of 48 hours prior to, during, and 48 hours after installation.
- B. Flooring should not be installed before the concrete or asphalt subfloor has cured for a minimum of thirty (30) days.
- C. Moisture vapor emissions content of the concrete slab must not exceed 3 lbs./1000 sq. ft./24 hours when using the calcium chloride test as per ASTM F1869-98.
- D. Installation of the rubber sport flooring shall only commence once all work related to other craftsmen and trades have been completed.

NOTE: It is the responsibility of the General contractor to provide to the flooring contractor a site that meets these conditions.

1.8 WARRANTY

Provide manufacturer’s standard warranty.

PART 2 – PRODUCT

2.1 BASIS OF DESIGN

- A. Prefabricated rubber sport flooring to be VULCANIZED ADVANCE 8mm thickness, with smooth mat finish as manufactured by MONDO AMERICA INC. Provided in standard colors.
- B. Subject to compliance with requirements, products of equal performance may be used base on the architect’s review of submittal per Section 01 6300 “Product Substitution Procedures”.

2.2 MATERIAL

- B. Prefabricated rubber sport flooring to be sheet goods, calendered and vulcanized with a base of natural and synthetic rubber, stabilizing agents, and pigmentation. The material to be provided in six-foot (1.83m.) widths and lengths of ±20’ to ±40’ (±6 to ±12 m.)
- C. Prefabricated rubber sport flooring to be manufactured in two layers, which are vulcanized together. The shore hardness of the lower layer to be less than the upper layer, shore hardness of the respected layers to be recommended by the manufacturer and within the limits hereinafter specified. Field laminated dual durometer are unacceptable.
- D. Physical properties of the prefabricated rubber sport flooring to conform to the requirements found in the following table:

Physical Properties	Standard	Specification
Hardness Shore A	ASTM D2240	72 / 55
Critical Radiant Flux	ASTM E648	1.03 Watt/sq. cm. Class 1
Static Load Limit	ASTM F970	0.004
Fungal Resistance Test	ASTM G21-90	No growth
Coefficient of Friction	ASTM D2047	Dry 1.10 Wet 1.10
V.O.C. Compliance	ASTM D5116	Yes
Color Stability		Good
Light reflection		Average
Chemical Resistance		Good

Manufacturer reserves the right to change, at any time without notice, the physical properties, or specifications to improve the products or production process.

2.2 ADHESIVE

- A. Rubber sport flooring adhesive to be two-part polyurethane adhesive suitable for adherence of a sheet good to asphalt, concrete, or urethane substrate. Adhesive to be supplied or approved/recommended by rubber sheet manufacturer.

2.3 PATCHING COMPOUND

- A. Patching compound to be supplied or approved/recommended by rubber sport flooring manufacturer.

2.4 LINE MARKING

- A. Line marking paint to be supplied by sport surface manufacturer. Install in accordance with National Federation of State High School Association (www.nths.org); volleyball per USA volleyball (www.usavolleyball.org).

PART 3 EXECUTION

3.1 INSPECTION

- A. Ensure that substrates are dry and exhibit neutral alkalinity. Moisture (calcium chloride) tests are recommended on various area of the subfloor as per ASTM 1869- 98.

3.2 FLOOR PREPARATION

- A. Remove sub floor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with patching compound.
- B. Clean floor and apply and float filler to leave smooth, flat, hard surface. Prohibit traffic until filler is cured.
- C. Subfloor is to be prepared as per manufacturer's recommendations.

3.3 INSTALLATION

- A. Install sport flooring in accordance with manufacturer's printed instructions.
- B. Sport flooring to be unrolled and allowed to relax.
- C. Cut and adjust sport flooring prior to adhesion.
- D. Mix adhesive in accordance with manufacturer's instructions.
- E. Hold all seams in place with suitable weights for a minimum of 12 hours.
- F. Lines to be painted as per manufacturer's recommendations.
- G. Surface to be protected before, during and after installation until project's acceptance by the owner or his agent.

END OF SECTION 09 6240

SECTION 09 6500 RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes preparation of substrate surfaces
- B. Application of rubber base, stringer, stair tread, stair riser, visually impaired strip, and landing tile.
- C. Cleaning of all surfaces and areas of work.

1.2 SAMPLES

- A. Submit samples in accordance with Section 01 3300

1.3 EXTRA MATERIAL

- A. Deliver 20 linear feet of each color and pattern of floor material required for project, for maintenance use.
- B. Clearly identify each box/roll.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

- A. Design based upon:
 - 1. Johnsonite
- B. Acceptable manufacturers:

Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- 1. Armstrong
- 2. Flexco
- 3. Roppe Industries

- C. Subject to compliance with requirements, products of equal performance may be used based on the architect's review of submittals per section 01 6300 "Product Substitution Procedures."

2.2 FLOOR COVERING MATERIALS

- A. Rubber Base: 1/8 inch ga. x 4" high cove. Color selected by architect from manufacturer's full color line. Provide preformed inside and outside corners with same height as adjacent base throughout the building.

2.3 RESILIENT STAIR ACCESSORIES

- A. Style: Johnsonite model VIHTR rubber stair tread with integrated riser for the visually impaired, and matching landing tile.

- B. Resilient Stair Treads Standard: ASTM F -1861-98.
 - 1. Material Requirement: Type TP (rubber, thermoplastic).
 - 2. Surface Design:
 - a. Hammered
 - b. Thickness 0.125" (3.17cm)
 - 3. Manufacturing Method: 2-inch (5.0cm) wide contrasting color grit tape.
- C. Nosing Style: Square, adjustable to cover angles between 60 and 90 degrees.
- D. Nosing Height: 2 inches (51 mm).
- E. Thickness: 1/4 inch (6 mm) and tapered to back edge.
- F. Size: Lengths and depths to fit each stair tread in one piece or, for treads exceeding maximum lengths manufactured, in equal-length units.
- G. Stringers: Of same thickness as risers, height and length after cutting to fit risers and treads and to cover stair stringers; produced by same manufacturer as treads and recommended by manufacturer for installation with treads.
- H. Colors and Patterns: by Architect from color palette 'A'.

2.4 ACCESSORIES/ADHESIVES/SEALERS

- A. Edge Strips: As required where carpet or dissimilar materials terminates at another flooring material. Edge strips shall match the color of the floor material or base, as selected by the Architect, from manufacturer's standard color line.
- B. Primers and Adhesives: As recommended by the flooring manufacturer for this installation and material.

PART 3 - EXECUTION

3.1 SITE AND SUBSTRATE CONDITIONS

- A. Ensure floor surfaces are smooth and flat with maximum variation of 1/8 inch in 10 feet.
- B. Ensure concrete floors are dry (maximum 7% moisture content) and exhibit negative alkalinity, carbonization or dusting.
- C. Maintain minimum 70 degrees F air temperature at flooring installation area for 3 days prior to, during, and for 24 hours after installation.
- D. Store flooring materials in area of application. Allow 3 days for material to reach equal temperature as area.

3.4 INSTALLATION - BASE

- A. Fit joints tight and vertical. Maintain minimum measurement of 18 inches between joints.

- B. Miter internal corners. Use pre-molded sections for external corners and exposed ends.
- C. Install base on solid backing. Adhere tightly to wall and floor surfaces.
- D. Scribe and fit to doorframes and other obstructions.
- E. Install straight and level to variation of plus or minus 1/8 inch over 10 feet.

3.5 INSTALLATION – STAIR TREAD, NOSING, RISER AND STRINGER

- A. Install per manufacturer's Installation Manual.
- B. Install with manufacturer's recommended adhesive.

3.6 PROTECTION

- A. Prohibit traffic from floor finish for 48 hours after installation.

3.7 CLEAN-UP

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean, seal and wax floor and base surfaces in accordance with manufacturer's recommendations.

END OF SECTION 09 6500

SECTION 09 6723 1/8" - DECORATIVE BROADCAST EPOXY FLOORING SYSTEM

PART 1 -GENERAL

1.1 WORK INCLUDED

- A. Furnish necessary material, labor, and equipment required to prepare designated areas and install a 1/8" Decorative Broadcast Epoxy Flooring System.

1.2 RELATED WORK

- A. Drawings and general provisions of contract including General and Special Conditions and Division I, excepting special Submittal and Quality Assurance provisions in this section.

1.3 QUALITY ASSURANCE

- A. Manufacturer's Qualifications
Obtain 1/8" Decorative Broadcast Epoxy Flooring System materials from a single manufacturer with a minimum of 5 years verifiable experience providing materials of the type specified in this section.
- B. Contractor's Qualifications
Installation must be performed by a manufacturer approved contractor with skilled mechanics having not less than three (3) years satisfactory experience in the installation of the type of system as specified in this section, and must be approved in writing by the manufacturer of the 1/8" Decorative Broadcast Epoxy Flooring System.

1.4 WARRANTY

- A. The contractor and the manufacturer shall furnish a standard guarantee of the 1/8" Decorative Broadcast Epoxy Flooring System for a period of one year after installation. The labor and material guarantee shall include loss of bond and wear-through to the concrete substrate from normal use.
- B. Not included in the warranty are damage due to structural design deficiencies including but not limited to slab cracking from lateral, vertical or rotational movement, and gouging or other damage due to fork lifts, other equipment, delamination caused by vapor transmission, Acts of God, or other elements beyond the scope of protection of this system nor causes not related to the system materials.
- C. In case of a warranty claim, the owner will notify the manufacturer and contractor in writing within 30 days of the first appearance of problems covered under this warranty. The owner will provide free and unencumbered access to the area during normal working hours for warranty rework. Property protection is also the owner's responsibility. Remedy is limited to direct repair of the 1/8" Decorative Broadcast Epoxy Flooring System.

1.5 SUBMITTAL

A. System Data

Submit manufacturer's specifications on cured system and individual components of the 1/8" Decorative Broadcast Epoxy Flooring System, including physical properties and performance properties and tests described in part 2.01 B and submit Material Safety Data Sheets. Each individual component of the system will be evaluated on the basis of these standards. For any tests not listed in the manufacturer's standard nationally published data, the manufacturer must supply the missing data accompanied by the independent testing laboratory's test results which prove compliance in accordance with the referenced standard(s). Furnish 2 sets of this information. Manufacturer's standard color chart shall also be submitted. Furnish 2 sets of this information.

B. The contractor shall submit a 6" x 6" cured system sample which the contractor has made for verification purposes and finish texture approval.

C. Contractor Experience

The contractor shall furnish a list of projects using either specified material or equivalent that they have installed during the last 5 years. Information shall include: project name, square footage, owner contact name with owner's address and phone number. Also, the contractor shall furnish résumés detailing the experience of key project personnel including supervisors and mechanics.

D. It is the intention of this Section to provide the products as named. Substitutions will be considered only when received by the Architect, Engineer or Design Professional through a bidding Prime Contractor at least ten days prior to the date set for receipt of bids. Upon receipt of any such submission, the Architect, Engineer or Design Professional will determine whether or not the proposed product is an equal. In the event the Architect, Engineer or Design Professional determines that a proposed system is an approved equal, he will issue an addendum and notify all bidders at least 48 hours prior to receipt of bids. No substitutions will be considered after contract bid date.

E. The contractor shall submit a copy of the manufacturer's packing slip, tagged for this specific job, along with calculations, signed by an officer of the primary material supplier demonstrating that the quantity of material furnished for the project will achieve the specified coverage and mil thickness.

1.6 MATERIAL DELIVERY, HANDLING AND STORAGE

A. Primary system materials shall be delivered in the manufacturer's undamaged, unopened containers. Each container shall be clearly marked with the following:

- Product name(s) and/or Number(s)
- Manufacturer's name
- Component designation (A, B, etc.)
- Product Mix Ratio
- Health and Safety Information
- CHEMTREC Emergency Response Information

B. Provide equipment and personnel to handle the materials by methods which prevent damage.

- C. The contractor shall promptly inspect direct jobsite material deliveries to assure that quantities are correct, comply with requirements and are not damaged.
- D. The contractor shall be responsible for materials furnished by him, and he shall replace, at his own expense, such materials that are found to be defective in manufacture or that have become damaged in transit, handling or storage.
- E. Store material(s) in accordance with manufacturer's instructions, with seals and labels intact and legible. Maintain temperatures within the required range. Do not use materials which exceed the manufacturer's maximum recommended shelf life.

1.7 JOB CONDITIONS

- A. The contractor shall visit the jobsite prior to the installation of the 1/8" Decorative Broadcast Epoxy Flooring System to evaluate substrate condition, including substrate moisture transmission, quantity and severity of cracking, and the extent of repairs needed. Substrate imperfections should be repaired only after mechanical preparation of the substrate. Surface preparation reveals most imperfections requiring repair. Concrete substrates shall be tested to verify that the moisture vapor transmission of the substrate does not exceed the 1/8" Decorative Broadcast Epoxy Flooring System manufacturers' recommendations. Cost associated with repair, leveling and remediation of the substrate are the responsibility of the provider of the substrate.
- B. The contractor should exercise care during surface preparation and system installation to protect surrounding substrates and surfaces, as well as in-place equipment. The contractor shall prepare the substrate to remove laitance and open the surface. This shall be achieved by light brush grit blasting. Surface profile achieved shall be similar to medium grit sandpaper and free from bond-inhibiting contaminants.
- C. Sub floor tolerances are specified in Section 03 3000 (in accordance with ACI 302). Each drain in the installation area must be working and raised or lowered to the actual finished elevation of the 1/8" Decorative Broadcast Epoxy Flooring System.
- D. System must be protected by the General Contractor or, as a separate bid item, by the installing contractor until it is inspected and turned over to the owner.
- E. The minimum slab temperature must be conditioned to 60 degrees F before commencing installation, during installation, and for at least 72 hours after installation is complete. The substrate temperature must be at least 5 degrees F above the dew point during installation.
- F. Maintain lighting at a minimum uniform level of 50 or more foot candles in areas where the 1/8" Decorative Broadcast Epoxy Flooring System is being installed. It is the recommendation of the manufacturer that the permanent lighting be in place and working during the installation.
- G. Leaks from pipes and other sources must be corrected prior to the installation of the 1/8" Decorative Broadcast Epoxy Flooring System.

PART 2 -PRODUCTS

2.1 MATERIALS

- A. System Overview

The General Polymers Ceramic Carpet #400, 1/8" Decorative Broadcast Epoxy Flooring System, as manufactured by Sherwin-Williams, consists of 3579 Standard Primer / Binder as the primer, 3561 Epoxy Resin Glaze as the binder resin, 5900F ESTES Colored Quartz Aggregate, and 3745 Self-Leveling Epoxy as the grout. *seal coat*: 4685 Poly-Cote Urethane

B. Typical Physical Properties

Color	Pre-Blended Standard Colors Custom Color Blends Available
Hardness @ 24 hours Shore D ASTM D 2240	70/65
Compressive strength ASTM C 579	12,000 psi
Tensile Strength ASTM C 307	2,500 psi
ASTM D 638	6,000 psi
Abrasion Resistance ASTM D 4060, CS-17 Wheel, 1,000 cycles	90-100 milligrams lost
Flexural Strength ASTM C 580	4,500 psi
ASTM D 790	10,000 psi
Adhesion ACI 503R	300 psi concrete failure
Flammability	Self-extinguishing over concrete
Resistance Elevated Temperatures MIL-D-3134J	No slip or flow at required temperature of 158°F
Impact Resistance MIL-D-3134J	Withstands 16 ft-lbs without cracking, delaminating or chipping
ASTM C = Mortar system	
ASTM D = Resin only	

PART 3 -EXECUTION

3.1 SURFACE PREPARATION

- A. For thorough instructions regarding preparation of concrete substrates consult "Instruction for Concrete Surface Preparation" (Form G-1).

3.2 INSTALLATION

A. General

Apply each component of the 1/8" Decorative Broadcast Epoxy Flooring System in compliance with manufacturer's written installation instructions and strictly adhere to mixing and installation methods, recoat windows, cure times and environmental restrictions. The 1/8" Decorative

Broadcast Epoxy Flooring System is to be installed directly over non-moving control joints and cracks which have been treated with EPO-FLEX epoxy, and the 1/8" Decorative Broadcast Epoxy Flooring System will terminate at the edge of isolation and expansion joints as designated by the Architect, Engineer or Design Professional. Integral cove base shall be installed where specified in the drawings.

B. Cracks

After preparation, evaluation of quantity and severity of cracks in concrete will determine the needed repairs. Original bid assumes repair and treatment of 20 linear feet of cracks and control joints. Additional treatment is considered excessive and must be bid on a per linear foot basis. For information pertaining to the treatment of cracks in concrete substrates, consult Manufacturer's publication, Concrete 102.

C. Control Joints

Original bid assumes repair and treatment of 20 linear feet of cracks and control joints. Additional treatment is considered excessive and must be bid on a per linear foot basis. For information pertaining to the treatment of control joints in concrete substrates, consult Manufacturer's publication, Concrete 103.

D. Isolation/Expansion and Other Joints Subject to Movement

All expansion joints must be honored through the flooring system. For information pertaining to the above, consult Manufacturer's publication, Concrete 105.

E. System Primer

3579 Standard Primer / Binder

F. First Broadcast

3561 Epoxy Resin Glaze
5900F ESTES Colored Quartz Aggregate

G. G. Second Broadcast

3561 Epoxy Resin Glaze
5900F ESTES Colored Quartz Aggregate

H. H. Grout Coat

and 3745 Self-Leveling Epoxy

I. I. Seal Coat

4685 Poly-Cote Urethane

3.3 CURING, CLEANING AND PROTECTION

A. Cure the 1/8" Decorative Broadcast Epoxy Flooring System materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of the installation and prior to completion of the curing process.

B. Protect the 1/8" Decorative Broadcast Epoxy Flooring System from damage and wear during other phases of the construction operation, using temporary coverings as recommended by the manufacturer, if required. Remove temporary covering just prior to final inspection.

C. Clean the 1/8" Decorative Broadcast Epoxy Flooring System just prior to final inspection, using materials and procedures suitable to the system manufacturer.

- D. Some cleaners will affect the color, gloss or texture of your polymer floor surfaces. To determine how your cleaner will perform, first test each cleaner, in a small area, utilizing your cleaning technique. This precaution will demonstrate the effect of your cleaner and technique. If no deleterious effects are observed, continue with the procedure. If deleterious effects do occur, modify the cleaning material and/or procedure. For recommendations regarding types of cleaners, contact the 1/8" Decorative Broadcast Epoxy Flooring System manufacturer.

END OF SECTION 09 6723

SECTION 09 6813 – CARPET TILE

PART 1 – GENERAL

1.01 SUMMARY

- A. Related Sections:
 - a. Section 09 6519.23 Resilient Flooring
 - b. Section 09 6816 Carpeting.

1.02 SUBMITTALS

- A. Shop Drawing showing columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required as well as direction of carpet pile and pattern, location of edge moldings and edge bindings shall be submitted to the Architect for approval prior to installation.
- B. Floor schedule using same room designations indicated on drawings.
- C. Product Data: Provide data on specified products, describing physical and performance characteristics, sizes, patterns, colors available, and method of installation.
- D. Verification Samples: Submit samples illustrating color and pattern for each carpet material specified.
- E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- F. Maintenance Data: Include maintenance procedures, recommendations for maintenance materials and equipment, and suggested schedule for cleaning.
- G. Manufacturer's Product Warranty.
- H. Verification of reclamation and recycling process.

1.03 QUALITY ASSURANCE

- A. Manufacturer Qualifications
 - 1. Company specializing in manufacturing specified carpet with minimum 2 years documented experience.
 - 2. Upon request, manufacturer to provide representative to assist in project start-up and to inspect installation while in process and upon completion. Representative will notify designated contact if any installation instructions are not followed.
 - 3. Single Source Responsibility: Obtain each type of product from one source and by a single manufacturer.
- B. Installer Qualifications
 - 1. Flooring contractor must be certified by the manufacturer prior to bid.
 - 2. Flooring contractor to be a specialty contractor normally engaged in this type of work and shall have prior experience in the installation of these types of materials.

3. Certify payment of Prevailing Wage Rates to the installers.
4. Flooring contractor possessing Contract for the product installation shall not sub-contract the labor without written approval of the Project Manager.
5. Flooring contractor will be responsible for proper product installation, including floor testing and preparation as specified by the manufacturer and JOB CONDITIONS herein.
6. Flooring contractor to provide Owner a written installation warranty that guarantees the completed installation to be free from defects in materials and workmanship for a period of one year after job completion.

1.04 DELIVERY, STORAGE, & HANDLING

- A. Deliver materials to the site in manufacturer's original packaging listing manufacturer's name, product name, identification number, and related information.
- B. Store in a dry location, between 65 degrees F and 90 degrees F and a relative humidity below 65%. Protect from damage and soiling. Store in pallet form as supplied by Manufacturer. Do not stack pallets.
- C. Make stored materials available for inspection by the Owner's representative.
- D. Store materials in area of installation for minimum period of 48 hours prior to installation.

1.05 PROJECT CONDITIONS

- A. Sub-floor preparation is to include all required work to prepare the existing floor for installation of the product as specified in this document and Manufacturer's installation instructions.
- B. Please see ethos Modular Installation & Floor Preparation Instructions for specific requirements for moisture vapor emission rate, ambient conditions, and other requirements.
- C. All material used in sub-floor preparation and repair shall be recommended by the carpet manufacturer and shall be chemically and physically compatible with the carpet system being bid.
- D. Maintain minimum 65 degrees F ambient temperature and 65% Relative Humidity for 72 hours prior to, during, and 48 hours after installation.
- E. Do not install carpet until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete, and ambient temperature and humidity conditions are and will be continuously maintained at values near those indicated for final occupancy.

1.06 EXTRA MATERIALS

- A. Provide additional 5% of each product for "attic stock."

PART 2 - PRODUCTS

2.01 RECYCLED CONTENT

- A. Product must contain a minimum of 27% recycled content by weight. This percentage is calculated by

dividing the weight of recycled content in one square yard of finished product by the total weight of one square yard of finished product, and multiplying by 100. [(Recycle Content Weight) / (Total Product Weight) x 100].

- B. Product must contain 27% post-consumer recycled content by weight from recycled post consumer carpet. This ensures that carpet is diverted from landfills for the production of the product and that virgin resource use in the product is reduced.
- C. Recycled content must be certified by a neutral, independent, third party organization such as Scientific Certification Systems. Product must carry product label certifying overall recycled content (including post-industrial and post-consumer content). Report percentage of post-industrial and post-consumer recycled content as a percentage of total product weight.
- D. Product must be available inclusive of 50% recycled content secondary backing.
 - 1. Recycled content and post consumer content must not be subject to availability. Post industrial and post consumer recycled content of product installed must be the same as those required by Project requirements.
 - 2. Also, Recycled content must be expressed as an exact percentage or a range. Statements such as “*up to 60%*” recycled content are not acceptable.
 - 3. Manufacturer must fully comply with FTC Part 260 “Guides for the Use of Environmental Marketing Claims,” with respect to advertising, labeling, product inserts, catalogs and sales presentations of all its flooring products submitted and sold.

2.02 PRODUCT RECYCLABILITY

- A. Product must meet FTC guides for recyclability and must be one hundred percent (100%) closed-loop recyclable back into flooring. A manufacturer cannot claim that a product or any portion of a product is recyclable if it is incinerated even if incineration is used to produce heat and power (i.e. waste-to-energy) per FTC guides 16 CFR section 260.7 (d) example 3.
- B. Recyclability of product installed must be the same as those required by Project requirements.

2.03 RECYCLING PROGRAM

- A. Manufacturer must have a collection and recovery system for product and a fully established, currently operational recycling program at time of bid per FTC guides Section 260.7 (d).
 - 1. Manufacturer must be able to reclaim and recycle 100% of installed carpet. Like material as installed must be 100% recycled.
 - 2. Manufacturer must have written guarantee that 100% of the recovered vinyl backed carpet will be recycled and that no portion of the product will be landfilled or incinerated (including waste-to-energy).

2.04 NSF 140-2007 CERTIFICATION

- A. Product must be certified at the Platinum level to ANSI standard **NSF 140**, the Sustainable Carpet Assessment Standard (SCAS). Product certification must be conducted by an independent, third party organization such as Scientific Certification Systems. Provide documentation.
- B. Product must be Silver level Cradle to Cradle Certified™ v3.1. Cradle to Cradle Certified is a certification mark licensed by the Cradle to Cradle Products Innovation Institute.

2.05 PRODUCT WARRANTY

- A. Warranty to be sole source responsibility of the Manufacturer. Second source warranties and warranties that involve parties other than the carpet manufacturer are unacceptable.
- B. If the product fails to perform as warranted when properly installed and maintained, the affected area will be repaired or replaced at the discretion of the Manufacturer.
- C. Chair pads are not required, but are recommended for optimum textural performance. Absent the use of chair pads, more intensive maintenance will be required for areas in direct contact with chair caster traffic, and some degree of appearance change is to be expected.
- D. The non-prorated lifetime limited warranty shall specifically warranty against:
 - 1. Excessive Surface Wear: More than 15% loss of pile fiber weight
 - 2. Excessive Static Electricity: More than 3.0 kV per AATCC 134
 - 3. Resiliency Loss of the Backing: More than 10% loss of backing resiliency
 - 4. Delamination
 - 5. Edge Ravel
 - 6. Zippering
- E. Tuft Bind warranty in lieu of edge ravel and zippering is not acceptable.

2.06 FIBER

- A. Nylon Fiber: Bulked Continuous Filament (BCF) Nylon in a loop pile construction Tandus Centiva Dynex SD nylon/ Dynex nylon.
- B. For yarn containing recycled content, report post consumer and post industrial recycled content of the pile face yarn based on total yarn weight i.e. $[(\text{Recycle Content in Pile Face Yarn}) / (\text{Total Weight of Pile Face Yarn}) \times 100]$
- C. Fiber to contain carbon-core filament for permanent static control. Topical treatments are not allowed.
- D. Durable stain inhibitor should be applied to the fiber during product manufacturing to resist fiber staining and soiling.
Application Rate: 2% of Face Weight

2.07 BACKING CHARACTERISTICS

- A. Primary Backing: Synthetic Non-Woven.
- B. Secondary Backing: ethos modular
 - 1. Density (ASTM D-1667): 65 Min. lbs/cu ft +/- 5%
 - 2. Standard Size: 24" x 24"
 - 3. Recycled Content: 50% Recycled Content Secondary Backing
 - 4. Fiberglass Reinforced
 - 5. Face yarn fully fused to secondary backing system that will not delaminate.
 - 6. Delamination: No delamination per ASTM D3936
 - 7. Product must not contain pesticides (US EPA Registered Antimicrobials). Installation adhesives are exempt from this section.

2.08 PERFORMANCE CHARACTERISTICS

- A. Test reports for the following performance assurance testing to be submitted upon request. Submitted

results shall represent average results for production goods of the referenced style.

B. Requirements listed below must be met by all products.

1. Flooring Radiant Panel
ASTM E-648 / NFPA 253: Class 1 (CRF: 0.45 watts/sq cm or greater)
2. Federal Flammability
CPSC FF 1-70: Passes
3. Smoke Density
ASTM E-662 / NFPA 258: < 450 Flaming Mode
4. Electrostatic Propensity
AATCC 134 (Step & Scuff): 3.0 kV or less
5. Static Coefficient of Friction
ASTM C-1028: Passes ADA Requirements for Accessible Routes (minimum 0.60)
6. Delamination of Secondary Backing of Pile Floor Coverings
ASTM D-3936: No Delamination
7. Lightfastness
AATCC 16E: > 4 @ 60 hours
8. TARR
Severe Traffic: 3.5 minimum
9. Dimensional Stability
Aachen / ISO 2551: Maximum Change +/- 0.149%
11. Moisture Barrier
Moisture Penetration by Impact @ 10 psi: No Penetration of backing after 10,000 impacts

2.09 PRODUCT SPECIFICATIONS

A. Manufactured by Tandus Centiva

1. Aftermath II ethos modular with Omniccoat Technology™ (Color: Fireworks)
 - A. Construction: Stratatec® Patterned Loop
 - B. Gauge: 5/64
 - C. Stitch Rate: 8.5 pile units / inch
 - D. Tuft Density: 108.8 tufts/sq inch
 - E. Pile Height Average: .187 inch
 - F. Pile Thickness: .081 inch
 - G. Density Factor (UM44D): 7,556 oz/cu yd
 - H. Fiber System: Dynex SD® Nylon / Dynex® Nylon BCF Nylon with Static Control & Ensure
 - I. Dye Method: 90% Solution Dyed / 10% Yarn Dyed
 - J. R-Value: 0.51 Minimum Hr-ft²-°F/Btu
 - K. Static Coefficient of Friction: ASTM C-1028; Passes ADA requirements.
 - L. Static Propensity: AATCC 134: 3.5 kv or less
 - M. Flooring Radiant Panel: ASTM E-648 or NFPA 253: Class 1

- N. Acoustic Requirements: Noise Reduction Coefficient (NRC): 0.15 Minimum
- O. Secondary Backing Density: 65 Min. lbs/cu ft +/- 5%
- P. Secondary Backing Recycled Content: 50%
- Q. Total Weight: 94.9 oz/sq yd +/- 5%
- R. Third Party Certification: NSF 140 Platinum rating / Cradle to Cradle Certified™ v3.1: Silver
- S. Total Product Recycled Content (based on Total Weight): 58.7%
- T. Total Product Post Consumer Content (based on Total Weight): 34.8%
- U. Environmental Impact: No pesticides added to product (US EPA Registered Antimicrobials)

B. Manufactured by Tandus Centiva

1. Assertive Action modular

- A. Construction: Symtex®
- B. Gauge: 1/10 | 39.4 rows
- C. Stitch Rate: 9.0 stitches / inch
- D. Pile Height Average: .187 inch
- E. Fiber System: TDX® Nylon
- F. Dye Method: 100% Solution Dyed
- G. Static Coefficient of Friction: ASTM C-1028; Passes ADA requirements.
- H. Primary Backing: non-woven synthetic fiber
- I. Color to be selected by the Architect from the manufacturer's standard colors.
- J. Location/ size schedule- custom fit under all water coolers in halls:
 - i. Lobby 121: 3'-6" x 6'-1"
 - ii. Hall 400: 3'-6" x 12'-0"
 - iii. Hall 522: 3'-6" x 6'-0"
 - iv. Hall 622: 3'-6" x 6'-0"

C. Substitutes/Alternates

Subject to compliance with all requirements per section 01 6300 "product substitution procedures.", Architect prior approved "or equal" must match the selected colors, have similar aesthetic appearance and tuft density, factory-applied "dry" adhesive, equivalent NSF 140 certification, recycled content certification labels and recyclability. Substitution sample and submittals must be submitted for written approval of quality and color at least ten days prior to bid to be considered. Sample of proposed substitute must be inclusive of both the face and proposed backing (color-only sample not acceptable).

2.10 ACCESSORIES

- A. Materials recommended by Manufacturer for patching, leveling, priming, etc.
- B. Base, Carpet Edge, and Transition Strips: As specified in applicable sections.

PART 3 EXECUTION

3.01 EXAMINATION / PREPARATION

- A. Prepare sub-floor to comply with criteria established in Manufacturer's installation instructions. Use only preparation materials that are acceptable to the Manufacturer.
 - 1. Remove all deleterious substances from substrate(s) that would interfere with or be harmful to the installation.

2. Remove sub-floor ridges and bumps. Fill cracks, joints, holes, and other defects.
- B. Verify that sub-floor is smooth and flat within specified tolerances and ready to receive carpet.
 - K. Verify that substrate surface is dust-free and free of substances that would impair bonding of product to the floor.
 - L. Verify that concrete surfaces are ready for installation by conducting moisture and pH testing. Results must be within limits recommended by Manufacturer.
 - M. There will be no exceptions to the provisions stated in the Manufacturer's installation instructions.

3.02 INSTALLATION - GENERAL

- A. Install product in accordance with Manufacturer's installation instructions.
- B. Product must meet the requirements of CRI's Green Label Plus (GLP) program for carpet. Provide documentation.
- C. Adhesive must meet the requirements of CRI's Green Label Plus program for adhesive. Provide documentation.
- D. Adhesives must be below the VOC content limits specified by the South Coast Air Quality Management District Rule #1168. Provide documentation.
- E. No US EPA registered pesticides (antimicrobials) are to be added to the product. Antimicrobial treatments are registered with the EPA as preservatives of the products only, and no health benefit should be claimed or expected. If antimicrobials are added then third party documentation with a seal is required stating that the pesticides used will cause NO HARM to the occupants. Installation adhesives are exempt from this section.
- F. Product as installed to be securely attached to the floor in compliance with Americans with Disabilities Act (ADA), Section 4.5.3.
- G. Where demountable partitions or other items are indicated for installation on top of finished carpet tile floor, install carpet tile before installation of these items.
- H. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings.
- I. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- J. Install borders parallel to walls.
- K. Roll with appropriate roller for complete contact of product with adhesive to sub-floor.
- L. Trim carpet neatly at walls and around interruptions.
- M. Completed product is to be smooth and free of bubbles, puckers, and other defects.

3.03 PROTECTION & CLEANING

- A. Remove excess adhesive and/or other from floor and wall surfaces without damage.
- B. All rubbish, wrappings, debris, trimmings, etc. to be removed from site and disposed of properly.
- C. Clean and vacuum surfaces using a beater brush/bar commercial vacuum.
- D. After each area is installed, protect from soiling and damage by other trades.

END OF SECTION 09 6813

SECTION 09 7700 - SPECIAL WALL SURFACING (FIBERGLASS REINFORCED PLASTIC PANELS)

PART 1 -GENERAL

1.1 SUMMARY

- A. Section Includes: Special wall surfaces, including fiberglass reinforced plastic panels.
- B. Related Sections: Section(s) related to this section include:
 - 1. General Requirements: Division 1
 - 2. Painting: Division 9
 - 3. Gypsum Board: Division 9
 - 4. Metal Acoustical Ceiling Suspension Systems: Division 9

1.2 REFERENCES

- A. General: Standards listed by reference, including revisions by issuing authority, form a part of this specification section to extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation
- B. ASTM International:
 - 1. ASTM D2583 Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.
 - 2. ASTM D5420 Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact).
 - 3. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.

1.3 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide fiberglass reinforced plastic (FRP) panels which have been manufactured and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

1.4 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 01 Submittal Procedures Section.
- B. Product Data: Submit product data, including manufacturer's SPEC-DATA® product sheet, for specified products.
- C. Shop Drawings: Submit shop drawings showing layout, profiles and product components, including anchorage, accessories, finish colors, patterns and textures. Indicate location and dimension of joints and fastener attachment.
- D. Samples: Submit selection and verification samples for finishes, colors and textures. Submit 1 sample of each type of panel, trim and fastener.
- E. Quality Assurance Submittals: Submit the following:
 - 1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.

2. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics, criteria and physical requirements.
3. Manufacturer's Instructions: Manufacturer's installation instructions. Submit manufacturer's Installation Guide #6211.
4. Manufacturer's Field Reports: Manufacturer's field reports specified herein.

F. Closeout Submittals: Submit the following:

1. Operation and Maintenance Data: Operation and maintenance data for installed products in accordance with Division 01 Closeout Submittals (Maintenance Data and Operation Data) Section. Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.
2. Warranty: Warranty documents specified herein.

1.5 QUALITY ASSURANCE

A. Qualifications:

1. Installer Qualifications: Installer should be experienced in performing work of this section and should have specialized in installation of work similar to that required for this project.
2. Manufacturer Qualifications: Manufacturer should be capable of providing field service representation during construction and should be capable of approving application method.

1.6 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Division 01 Product Requirements Sections.
- B. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact. Package sheets on skids or pallets for shipment to project site.
- D. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer. Store panels indoors in a dry place at the project site.
- E. Handling: Remove foreign matter from face of panel by using a soft bristle brush, avoiding abrasive action.

1.7 PROJECT CONDITIONS

A. Environmental Requirements:

1. Installation shall not begin until building is enclosed, permanent heating and cooling equipment is in operation, and residual moisture from plaster, concrete or terrazzo work has dissipated.
2. During installation, and for not less than 48 hours before, maintain an ambient temperature and relative humidity within limits required by type of adhesive used and recommendation of adhesive manufacturer.
3. Provide ventilation to disperse fumes during application of adhesive as recommended by adhesive manufacturer.

- B. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

1.8 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.
- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.
 - 1. Warranty Period: 10 years commencing on Date of Substantial Completion.

1.9 MAINTENANCE

- A. Extra Materials: Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Division 01 Closeout Submittals (Maintenance Materials) Section.
 - 1. Quantity: Furnish quantity of glasbord units equal to 1% of amount installed.
 - 2. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra materials.

PART 2 -PRODUCTS

2.1 FIBERGLASS REINFORCED PLASTIC (FRP) PANELS

- A. Acceptable manufacturer: Design is based on Crane Composites, Inc.
Contact: Joliet Sales Office, PO Box 2429, Joliet, IL 60434; Telephone: (800) 435-0080, (815) 467-8600; Fax: (815) 467-8666; E-mail: salesjol@cranecomposites.com; website: [www.glasbord.com](http://www.kemlite.com/).<http://www.kemlite.com/>
- B. Proprietary Product(s)/System(s): Kemlite Fiberglass Reinforced Plastic (FRP) Panels.
 - 1. Glasbord Panels:
 - a. PIF
 - b. Color: Selected by the architect from the manufacturer's standard color line.
 - c. Size: Use largest manufacturer's standard size for application.
 - d. Moldings: Provide harmonizing PVC (polyvinyl chloride) moldings.
 - 2. Surfaseal Surface Protection: Provide manufacturer's proprietary Surfaseal surface protection for fiberglass reinforced plastic (FRP) panels.
 - 3. Division Bars, Corner Trim: Panel manufacturer's standard length extruded vinyl pieces; longest length possible to eliminate end joints.
 - 4. Fasteners: Noncorrosive drive rivets.

2.2 PRODUCT SUBSTITUTIONS

- A. Subject to compliance with requirements, comparable products may be used on Architect's review of submittals per Section 01 6300 "Product Substitutions Procedures".

2.3 ACCESSORIES

- A. Adhesive: Provide panel adhesive as recommended by panel manufacturer.

2.4 SOURCE QUALITY

- A. Source Quality: Obtain fiberglass reinforced plastic (FRP) panels from a single manufacturer. Provide panels and molding only from manufacturer specified to ensure warranty and color harmonization of accessories.

PART 3 -EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions for installation.

3.2 EXAMINATION

- A. Site Verification of Conditions: Verify that substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.
 - 1. Examine backup surfaces to determine that corners are plumb and straight, surfaces are smooth, uniform, clean and free from foreign matter, nails are countersunk and joints and cracks are filled flush and smooth with the adjoining surface.
 - 2. Do not begin installation until backup surfaces are in satisfactory condition.

3.3 INSTALLATION

- A. Fiberglass Reinforced Panel (FRP) Installation:
 - 1. Cut and drill panels with carbide tipped saw blades or drill bits, or cut with snips.
 - 2. Install panels with manufacturer's recommended gap for panel field and corner joints.
 - 3. Pre-drill fastener holes in panels with 1/8 inch (3.2 mm) oversize.
 - 4. For trowel type and application of adhesive, follow adhesive manufacturer's recommendations.
 - 5. Use products acceptable to panel manufacturer and install FRP system in accordance with panel manufacturer's printed instructions. Comply with panel manufacturer's Installation Guide #6211.
- B. Allowable Tolerances: 1/8" offsets between planes of board faces and 1/4" in 8' – 0" for plumb, level, warp and bow.

3.4 CLEANING

- A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace products that have been installed and are damaged. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance. Remove construction debris from project site and legally dispose of debris.
 - 1. Remove any adhesive or excessive sealant from panel face using solvent or cleaner recommended by panel manufacturer.

3.5 PROTECTION

- A. Protection: Protect installed product and finish surfaces from damage during construction.

END OF SECTION 09 7700

SECTION 09 8400 - ACOUSTICAL WALL TREATMENT (CEMENTITIOUS WOOD FIBER WALL PANELS)

PART 1 -GENERAL

1.1 SUMMARY

- A. Section Includes: Cementitious wood fiber plank acoustical Wall panel system and installation accessories.
- B. Related Sections:
 - 1. Section 09 2100 Gypsum Board
 - 2. Section 09 9100 Painting

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM C635 Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
 - 2. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 3. ASTM E1264 Standard Classification for Acoustical Ceiling Products.
- B. Ceilings and Interior Systems Construction Association (CISCA).
 - 1. CISCA Code of Practices.

1.3 SYSTEM DESCRIPTION

- A. Performance Requirements:
 - 1. Provide acoustical wall panel assembly designed and tested to provide surface burning characteristics (ASTM E84) as follows:
 - a. Flamespread: 5.
 - b. Smoke Developed: 15.
 - 2. Provide acoustical wall panel system which has been manufactured, fabricated and installed to provide Noise Reduction Coefficient (NRC) rating as follows:
 - a. .75.

1.4 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.
- B. Product Data: Submit manufacturer's product data and installation instructions.
 - 1. Recommended procedures for normal cleaning and removal of stains including precautions in use of cleaning materials that may be detrimental to surfaces.

- C. Samples: Submit selection and verification samples: 6" x 6" (152 x 152 mm) sample for each wood fiber wall panel unit required, showing full range of exposed texture to be expected in completed work.
- D. Quality Assurance/Control Submittals: Submit the following:
 - 1. Test Reports: Upon request, submit certified test reports from recognized test laboratories.
 - 2. Certificates: Submit manufacturer's certificate that products meet or exceed specified requirements.
- E. Warranty: Provide manufacturer's standard life-time panel breakage warranty.
- F. Not Used:

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Utilize an installer having demonstrated experience on projects of similar size and complexity.
- B. Regulatory Requirements and Approvals: Comply with requirements below.
 - 1. International Conference of Building Officials (ICBO):
 - a. ICBO Research Report No. 1116.

1.6 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Division 1 Product Requirement Section.
- B. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.
 - 1. Prevent soiling, physical damage or wetting.
 - 2. Store cartons open at each end to stabilize moisture content and temperature.

1.7 PROJECT/SITE CONDITIONS

- A. Environmental Requirements:
 - 1. Do not install acoustical panels until building is closed in and HVAC system is operational.
 - 2. Locate materials onsite at least 24 hours before beginning installation to allow materials to reach temperature and moisture content equilibrium.
 - 3. Maintain the following conditions in areas where acoustical materials are to be installed 24 hours before, during and after installation:
 - a. Relative Humidity: 65 - 75%.
 - b. Uniform Temperature: 55 - 70 degrees F (13 - 21 degrees C).

PART 2 -PRODUCTS

2.1 ACOUSTICAL WALL PANEL SYSTEM

- A. Manufacturer: Tectum Inc.
 - 1. 105 South 6th St., Newark, OH 43055; Telephone: (888) 977-9691, (740) 345-9691; Fax: (800) 832-8869; E-mail: info@tectum.com; website: www.tectum.com.

B. Acoustical Wall panel systems:

1. Tectum Finale Wall Panels:

- a. Material: Aspen wood fibers bonded with inorganic hydraulic cement.
- b. Thickness: 2" (25.4 mm). 1" Tectum plus 1" Tectum Furring strips each side of integral Soni-Core (100% recycle content) acoustic insulation.
- c. Size: 47 3/4" Width
- d. Length and height as indicated on Drawings
- e. Color: custom painted in field, color as selected by Architect.
- f. Mounting Style: CISCA "A" screw attached to suitable substrate.
- g. Bevel four edges, furring on all four sides.

2.2 ACCESSORIES

A. Provide accessories as follows:

1. Tectum Painted Head Screws:

- a. Material: Steel.
- b. Length: 3 1/4" inch minimum or to meet project requirements.
- c. Color: Natural.
- d. Type:
 - 1) For installation over CMU, use TapCon Screws.
 - 2) For installation over Gypsum Board, use Drywall Screw.

2. Tectum Touch-Up Paint:

- a. Color: Natural.

PART 3 -EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- A. Comply with the instructions and recommendations of the acoustical wall panel system manufacturer.
- B. Install materials in accordance with governing regulations, fire resistance rating requirements and industry standards applicable to work.
 1. Comply with CISCA Code of Practices.

3.2 EXAMINATION

A. Site Verification of Conditions:

1. Examine surfaces scheduled to receive suspended or directly attached acoustical units for unevenness, irregularities and dampness that would affect quality and execution of work.
2. Do not proceed with installation of wall panel system until unacceptable conditions are corrected.

3.3 INSTALLATION

- A. Screw head to be flush with panel surface.

- B. Install panels so that field cut conditions occur at corners. If field cuts occur in areas other than corners, cover field cut edges by means of trim or other moldings.

3.4 CLEANING

- A. Clean exposed surfaces of acoustical panel, trim, moldings and suspension members to comply with manufacturer's instructions for cleaning.
- B. Touch up any minor finish damage.
- C. Remove and replace work which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

3.5 PROTECTION

- A. Protect installed work from damage due to subsequent construction activity, including temperature and humidity limitations and dust control, so that the work will be without damage and deterioration at the time of acceptance by the Owner.

END OF SECTION 09 8400

SECTION 09 9100 - PAINTING

PART 1 -GENERAL

1.1 WORK INCLUDED

- A. Extent of Painting: Except as otherwise noted or specified, all interior and exterior surfaces which are exposed to view, including piping, equipment, and similar items, shall be painted.
- B. Excluded Items: The following items and surfaces are specifically excluded from painting requirements.
 - 1. Materials with factory applied finish coats, except for matching touch-up requirements and roof mounted units.
 - 2. Materials which have integral color finish, such as aluminum, glass, acoustic tile, and floor coverings.
 - 3. Exterior concrete, except where painting or sealing is indicated on the drawings or specifications.
 - 4. Surfaces behind fixed equipment, cabinets and counters.
 - 5. Owner-furnished materials or equipment.

1.2 MOCK-UP

- A. Before proceeding with paint application, finish one complete surface of each color scheme required, clearly indicating selected colors, finish texture, materials and workmanship.
- B. If approved, sample area will serve as a minimum standard for work throughout work.

1.3 SAMPLES

- A. Prepare 12" x 12" samples of paint finish when requested by Architect. When possible, apply finish on same materials to which they will be applied on the job.
- B. Color Schedule to be prepared by Architect prior to commencement of work. The Owner reserves the right to include up to ten colors in the final color schedule.

1.4 MAINTENANCE MATERIALS

- A. Leave to the Owner not less than one gallon of each color used.
- B. Containers to be tightly sealed and clearly labeled for identification.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver paint materials in sealed, original labeled containers bearing manufacturer's name, type of paint, brand name, color designation and instructions for mixing and/or reducing.
- B. Provide adequate storage facilities. Store paint materials at minimum ambient temperature of 45°F in well-ventilated area.
- C. Take precautionary measure to prevent fire hazards and spontaneous combustion.

1.6 ENVIRONMENTAL CONDITIONS

- A. Ensure surface temperatures or the surrounding air temperature is above 40°F before applying finishes. Minimum application temperature for latex paints for interior work is 45°F and 50°F for exterior work.
- B. Provide adequate continuous ventilation and sufficient heating facilities to maintain temperatures above 45°F for 24 hours before, during, and 48 hours after paint application.
- C. Provide minimum 25 foot candles of lighting on surfaces to be finished.
- D. Comply with current applicable regulations of the Environmental Protection Agency. Products provided under this Section shall comply with Green Seal Standards and LEED requirements for VOC (volatile organic compounds) emissions. Paint shall not contain ethylene glycol. Paints, with the exception of primers and specialty products as functionally required for this Project and specified in Paragraph 3.6 shall have the following maximum VOC emissions:
 - 1. Interior finish coatings
 - a. Flat: 50 grams per liter.
 - b. Non-flat: 150 grams per liter
 - 2. Interior primers
 - a. Flat primer: 50 grams per liter.
 - b. Non-flat primer: 150 grams per liter
 - 3. All other special purpose coatings to comply with LEED requirements

1.7 PROTECTION

- A. Adequately protect other surfaces from paint and damage. Repair damage as a result of inadequate or unsuitable protection.
- B. Furnish sufficient drop cloths, shields and protective equipment to prevent spray or droppings from fouling surfaces not being painted and in particular, surfaces within storage and preparation area.
- C. Place cotton waste, cloths, and material which may constitute a fire hazard in closed metal containers and remove daily from site.
- D. Remove electrical plates, surface hardware, fittings and fastenings, prior to painting operations. These items are to be carefully stored, cleaned and replaced on completion of work in each area. Do not use solvent to clean hardware that may remove permanent lacquer finish.

PART 2 -PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Design is based on: Sherwin - Williams
- B. Dunn Edwards Paints
- C. Kwal Paint/Comex Group

- D. Substitutions: Subject to compliance with requirements, comparable products may be used based on the Architect's review of submittal per Section 01 6300 "Product Substitution Procedures" or equal performance.

2.2 MATERIALS

- A. Paint, Varnish, Stain, Enamel, Lacquer and Fillers: Type and brand listed herein or equivalent products manufactured by Sherwin-Williams, Kwal Paint/Comex Group and Dunn Edwards Paints as approved by the Architect.
- B. Paint Accessory Materials: Linseed oil, shellac, turpentine, and other materials not specifically indicated herein, but required to achieve the finishes specified, of high quality and approved manufacturer.
- C. Paints: Ready-mixed, except field catalyzed coatings. Pigments fully ground maintaining a soft paste consistency, capable of readily and uniformly dispersing to a complete homogeneous mixture.
- D. Paints to have good flowing and brushing properties and be capable of dry or curing free of streaks or sags.

PART 3 -EXECUTION

3.1 INSPECTION

- A. Thoroughly examine surfaces scheduled to be painted prior to commencement of work. Report, in writing, to Architect any condition that may potentially affect proper application. Do not commence until such defects have been corrected.
- B. Correct defects and deficiencies in surfaces which may adversely affect work of this section.

3.2 PREPARATION OF SURFACES

- A. Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry completely.
- B. Remove surface contamination from aluminum surfaces requiring a paint finish by steam, high pressure water or solvent washing. Apply etching primer or acid etch. Apply paint immediately if acid etching.
- C. Remove dirt, oil, grease, and sand, if necessary, to provide adhesion key when asphalt, creosote or bituminous surfaces require a paint finish. Apply compatible sealer or primer.
- D. Remove contamination from gypsum wallboard surfaces and prime to show defects, if any. Paint after defects have been remedied.
- E. Remove surface contamination and oils from galvanized surfaces and wash with solvent. Apply coat of etching type primer.
- F. Remove surface contamination and oils from zinc coated surfaces and prepare for priming in accordance with metal manufacturer's recommendations.

- G. Remove dirt, loose mortar, scale, powder and other foreign matter from concrete and concrete block surfaces which are to be painted or to receive a clear seal. Remove oil and grease with a solution of tri-sodium phosphate, rinse well and allow to thoroughly dry. New concrete surfaces shall be allowed to cure approximately 90 days. In addition, these surfaces should be “acid etched” with a 5-10% muriatic acid solution. The acid etch should be followed by a wash with a mixture of Tri-Sodium Phosphate and water in order to neutralize the acid. This in turn should be removed from the surface with clean water flush. All surface imperfections need to be filled with the appropriate patching material. Existing concrete surfaces shall be sanded smooth and primed and repainted in accordance with paint systems schedule.
- H. Remove stains from concrete and concrete block surfaces caused by weathering of corroding metals with a solution of sodium metasilicate after being thoroughly wetted with water. Allow to dry thoroughly.
- I. Remove grease, rust, scale, dirt and dust from steel and iron surfaces. Where heavy coatings of scale are evident, remove by wire brushing, sandblasting, or any other necessary method.
- J. Clean un-primed steel surfaces by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts and nuts are similarly cleaned. Prime surfaces to indicate defects, if any. Paint after defects have been remedied.
- K. Sand and scrape shop-primed steel surfaces to remove loose primer and rust. Feather out edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.
- L. Wipe off dust and grit from miscellaneous wood items and millwork prior to priming. Spot coat knots, pitch streaks and sappy sections with sealer. Fill nail holes and cracks after primer has dried and sand between coats. Back prime interior and exterior woodwork.

3.3 APPLICATIONS

- A. Apply each coat at proper consistency.
- B. Each coat of paint is to be slightly darker than preceding coat unless otherwise approved by the Architect.
- C. Sand lightly between coats to achieve required finish.
- D. Do not apply finishes on surfaces that are not sufficiently dry.
- E. Allow each coat of finish to dry before following coat is applied, unless directed otherwise by manufacturer.
- F. Where clear finishes are required, ensure tint fillers match wood. Work fillers well into the grain before set. Wipe excess from the surface.
- G. Back-prime interior woodwork which is to receive paint or enamel finish with enamel under-coater paint.
- H. Back-prime interior and exterior woodwork which is to receive stain and/or varnish finish with gloss varnish reduced 25% with mineral spirits.
- I. Prime top and bottom edges of wood doors with gloss varnish when they are to receive a stain or clear finish.

- J. Do not start finish coat work without Architect's approval of the first coat.
- K. Hollow Metal Doors and Windows: Finish both faces and long edges of interior doors as scheduled. Finish tops and bottoms with 2 coats of specified finish. Finish both faces and all edges of exterior doors as scheduled. Hollow metal doors and windows shall be sprayed.
- L. Apply exterior masonry coating in accordance with the manufacturer's instructions using low pressure airless spray equipment with a fan spray nozzle to produce a soft liquid stream. Do not fog or mist. Apply in continuous, uniform coat in accordance with manufacturer's written instructions.

3.4 MECHANICAL AND ELECTRICAL EQUIPMENT

- A. Refer to Exterior and Interior Paint Schedules for requirements for painting mechanical and electrical equipment.
- B. Remove grilles, covers and access panels for mechanical and electrical systems from location and paint separately.
- C. Finish paint primed equipment to color selected.
- D. Replace identification markings on mechanical or electrical equipment when painted over or spattered.
- E. Paint interior surfaces of air ducts, convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint to limit of sight line. Paint dampers exposed immediately behind louvers, grilles, convector and baseboard cabinets to match face panels.
- F. Paint exposed conduit and electrical equipment occurring in finished areas. Color and texture to match adjacent surfaces.
- G. Paint both sides and edges of plywood backboards for electrical equipment before installing backboards and mounting equipment on them.

3.5 CLEANING

- A. As work proceeds and upon completion, promptly remove paint where spilled, splashed or spattered.
- B. During progress of work, keep premises free from any unnecessary accumulation of tools, equipment, surplus materials, and debris.
- C. Upon completion of work, leave premises neat and clean to the satisfaction of Architect.

3.6 FINISHING SCHEDULE – EXTERIOR

- A. Provide the following paint systems for the substrates listed. The colors are to be selected by the Architect from the manufacturer's full line of colors.
- B. Metal (Aluminum):
 - 1. Industrial Acrylic System: Gloss Finish.

- a. 1st coat - SW-Pro Industrial Pro-Cryl Universal Primer, B66-310 series, <100 g/L VOC
- b. 2nd coat - SW-Pro Industrial Zero VOC Acrylic Gloss, B66-610 series, 0 g/L VOC
- c. 3rd coat - SW-Pro Industrial Zero VOC Acrylic Gloss, B66-610 series, 0 g/L VOC
Kwal 8400 Ambassador 100% Acrylic Gloss Block Resistant Enamel
D/E W7600 Spartagloss Acrylic Gloss Enamel

C. Metal (Ferrous):

1. Industrial Acrylic System: Gloss Finish.

- a. 1st coat - SW-Pro Industrial Pro-Cryl Universal Primer, B66-310 series, <100 g/L VOC
- b. 2nd coat - SW-Pro Industrial Zero VOC Acrylic Gloss, B66-610 series, 0 g/L VOC
- c. 3rd coat - SW-Pro Industrial Zero VOC Acrylic Gloss, B66-610 series, 0 g/L VOC

D. Metal (Galvanized):

1. Industrial Acrylic System: Gloss Finish.

- a. 1st coat - SW-Pro Industrial Pro-Cryl Universal Primer, B66-310 series, <100 g/L VOC
- b. 2nd coat - SW-Pro Industrial Zero VOC Acrylic Gloss, B66-610 series, 0 g/L VOC
- c. 3rd coat - SW-Pro Industrial Zero VOC Acrylic Gloss, B66-610 series, 0 g/L VOC

E. High Performance Metal (Handrails and Canopies):

1. Industrial Acrylic System: Gloss Finish.

- a. 1st coat - SW-Pro Industrial Pro-Cryl Universal Primer, B66-310 series, <100 g/L VOC
- b. 2nd coat - SW-Water-Based Acrolon 100 Polyurethane Gloss, B65-700 series, <100 g/L VOC
- c. 3rd coat - SW-Water-Based Acrolon 100 Polyurethane Gloss, B65-700 series, <100 g/L VOC

3.7 FINISHING SCHEDULE – INTERIOR

A. Provide the following paint systems for the substrates listed. The colors are to be selected by the Architect from the manufacturer's full line of colors, up to ten different colors.

B. Drywall:

1. Classrooms and other rooms. Eggshell Finish. Low Odor Zero VOC System

- a. 1st coat - SW-ProMar 200 Zero VOC Interior Latex Primer, B28W2600 0 g/L VOC
- b. 2nd coat - SW-ProMar 200 Zero VOC Eg-Shel B26-2600 series, 0 g/L VOC
- c. 3rd coat - SW-ProMar 200 Zero VOC Eg-Shel B26-2600 series, 0 g/L VOC

2. Corridors, custodial closets, storage, food service and toilet rooms. Semi-Gloss Finish. Low Odor Zero VOC System

- a. 1st coat - SW-ProMar 200 Zero VOC Interior Latex Primer, B28W2600 0 g/L VOC
- b. 2nd coat - SW-ProMar 200 Zero VOC Eg-Shel B26-2600 series, 0 g/L VOC
- c. 3rd coat - SW-ProMar 200 Zero VOC Eg-Shel B26-2600 series, 0 g/L VOC

C. Metal (Galvanized):

1. Semi-Gloss Finish. Industrial Acrylic System

- a. 1st coat - SW-Pro Industrial Pro-Cryl Universal Primer, B66-310 series, <100 g/L VOC
 - b. 2nd coat - SW-Pro Industrial Zero VOC Acrylic Semi-Gloss, B66-650 series, 0 g/L VOC
 - c. 3rd coat - SW-Pro Industrial Zero VOC Acrylic Semi-Gloss, B66-650 series, 0 g/L VOC
- D. Metal (Ferrous):
- 1. Semi-Gloss Finish. Industrial Acrylic System
 - a. 1st coat - SW-Pro Industrial Pro-Cryl Universal Primer, B66-310 series, <100 g/L VOC
 - b. 2nd coat - SW-Pro Industrial Zero VOC Acrylic Semi-Gloss, B66-650 series, 0 g/L VOC
 - c. 3rd coat - SW-Pro Industrial Zero VOC Acrylic Semi-Gloss, B66-650 series, 0 g/L VOC
- E. Metal High Performance Epoxy(Handrails)
- a. 1st coat - SW-Pro Industrial Pro-Cryl Universal Primer, B66-310 series, <100 g/L VOC
 - b. 2nd coat - SW-Pro Industrial Pre-Catalyzed Water-Based Epoxy Semi-Gloss, K46 series, <150 g/L VOC
 - c. 3rd coat - SW-Pro Industrial Pre-Catalyzed Water-Based Epoxy Semi-Gloss, K46 series, <150 g/L VOC
- F. Wood:
- 1. Urethane System: Gloss Finish to match Architect's sample.
 - a. 1st coat - SW- Wood Classics WB Polyurethane A68, <350 g/L VOC
 - b. 2nd coat - SW-Wood Classics WB Polyurethane A68, <350 g/L VOC
- G. Concrete Floors:
- 1. Epoxy paint. High-Performance, Solvent-borne, Gloss Finish. (Not LEED)
 - a. Preparation: Abrade, shot blast, or acid etch to create profile
 - b. 1st coat: SW- ArmorSeal® 1000 HS Epoxy, B67-2000 Series (3.0 - 5.0 mils dry per coat)
 - c. 2nd coat: SW- ArmorSeal® 1000 HS Epoxy, B67-2000 Series (3.0 - 5.0 mils dry per coat) anti-skid additive to be added to finish coat
 - 2. Epoxy paint. Water Based, Gloss Finish. (Not LEED)
 - a. Preparation: Abrade, shot blast, or acid etch to create profile
 - b. 1st coat: SW-ArmorSeal® Floor-Plex® 7100 Primer, B70W410 (1.5 - 2.0 mils dry)
 - c. 2nd coat: SW-ArmorSeal® Floor-Plex® 7100 Primer, B70W410 (1.5 - 2.0 mils dry) anti-skid additive to be added to finish coat
- H. CMU — Concrete Masonry Units
- 1. Semi-Gloss Finish — Low Odor Zero VOC Topcoat
 - a. 1st coat - SW-PrepRite Block Filler, B25W25, <50 g/L VOC
 - b. 2nd coat - SW-ProMar 200 Zero VOC Semi-Gloss B31-2600 series, 0 g/L VOC
 - c. 3rd coat - SW-ProMar 200 Zero VOC Semi-Gloss B31-2600 series, 0 g/L VOC
- I. G-1. CMU — Water-Based Epoxy High Performance System (Wet Areas)
- 1. Semi-Gloss Finish — Water-Based Epoxy System

- a. 1st coat - SW-Loxon Block Surfacer, A24W200, <100 g/L VOC
- b. 2nd coat - SW-Pro Industrial Pre-Catalyzed Water-Based Epoxy Semi-Gloss, K46 series, <150 g/L VOC
- c. 3rd coat - SW-Pro Industrial Pre-Catalyzed Water-Based Epoxy Semi-Gloss, K46 series, <150 g/L VOC

END OF SECTION 09 9100

SECTION 10 1100 - VISUAL DISPLAY SURFACES

PART 1 -GENERAL

1.1 WORK INCLUDED

- A. Fixed and sliding magnetic marker boards; bulletin boards, trim, and attachment hardware.

1.2 SUBMITTALS

- A. Submit manufacturer's product data and installation instructions.
- B. Submit samples indicating full range of colors and finishes for each of the materials specified.

PART 2 -PRODUCTS

2.1 BASIS-OF DESIGN PRODUCT:

Claridge Products and Equipment, Incorporated, LCS-II Marker Boards and Econo Slider Units (3 Track 3 Panel).

2.2 ACCEPTABLE MANUFACTURERS

- A. Alliance Wall Corp.
- B. Best Rite
- C. Greensteel, Inc.
- D. Nelson-Adams Company
- E. Newline
- F. Subject to compliance with requirements, comparable products may be used based on the Architect's review of submittals per Section 01 6300.

2.3 MATERIALS AND COMPONENTS

- A. Tempered hardboard.
- B. Steel sheet of low metalloid and copper content, manufactured for temperatures of 1400° F.
- C. Aluminum extrusions; 6063T5 alloy with duranodic finish.

2.4 FABRICATION:

Provide factory assembled marker board and tackboard units.

A. LCS-II MARKER BOARDS:

1. Face Sheet : Porcelain Enamel Steel (magnetic) with minimal "hot spot" (#75 Low Gloss) white for use as a projection surface.
2. Core: 7/16" MDF
3. Backing: Moisture Barrier Backing.

- B. Bulletin Board: 1/4" Self healing, burlap backed natural cork pressure bonded onto 1/4" hardboard.

- C. LCS-II Bulletin Board: as noted on the drawings
- D. LCS-II Marker Board: as noted on the drawings.
- E. Frame: Extruded aluminum, snap-on trim, and accessories as follows: Claridge #271 chalk trough with end caps and 1-inch cork display rail at top.
- F. Accessories:
 - a. Map rail: Standard continuous 1-inch extruded aluminum frame map rail with cork insert with end stops.
 - b. Display Rail: Continuous and integral with map rail; fabricated from cork approximately 1-inch (25 mm) wide.
 - c. Map Hooks and Clips: Two map hooks with flexible metal clips for every 48 inches (1219 mm) of map rail.
 - d. Flag Holder: Two for each room
- G. Econo Slider Unit (3 Track-3 Panel)
 - 1. TT-1 top track/fascia.
 - 2. Ball bearing nylon rollers.
 - 3. 5/8" C4 perimeter trim.
 - 4. #CR9 Chalktray/guide.
 - 5. #74 ES Map rail (shipped loose).
 - 6. J1 Frame.
 - 7. MB Sliding panels.

PART 3 -EXECUTION

3.1 INSTALLATION

- A. Provide units completely assembled in one piece without joints.
- B. Securely mount visual display boards in accordance with manufacturer's recommendations.
- C. Install straight, plumb and level. Provide all grounds, clips, backing materials, brackets, anchors, and trim.
- D. At completion of work, clean surfaces, and trim, leaving ready to use.

END OF SECTION 10 1100

SECTION 10 1400-SIGNAGE

PART 1 -GENERAL

1.1 SECTION INCLUDES

- A. Interior room signage.
- B. Interior wayfinding signage: independent mounted backlit letters, film artwork on glass; signage to incorporate logo artwork (concept furnished by Architect).
- C. Exterior Dimensional Characters.

1.2 RELATED SECTIONS

- A. Section 10 14 16 Building Plaque.

1.3 REFERENCES

- A. ICC/ANSI A117.1 - Accessible and Useable Buildings and Facilities.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 33 00 Submittal Procedures.
- B. Product Data: Manufacturer's descriptive literature.
- C. Shop Drawings: Illustrate sign design, letter spacing/layout/font size, confirm sign locations, and dimensions of all signage; provide scale graphic design of film application to be installed to interior glass window wall (Lobby 313).
- D. Selection Samples: One complete set of color chips representing manufacturer's full range of available colors.
- E. Verification Samples: Two full size samples, representing type, style, and color specified including method of attachment.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with requirements of ICC/ANSI A117.1 and ADAAG.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Inspect products upon receipt. Store products in manufacturer's packaging until ready for installation.

1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results.

PART 2 -PRODUCTS

2.1 BASIS OF DESIGN

- A. SignPlex, LLC – 4901 Edith Blvd NE, Albuquerque, NM 87107 – 505-341-0213
Attn Gabriel Campolla gabriel@signplex.biz
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 63 00 Product Substitution Procedures.

2.2 SIGNS

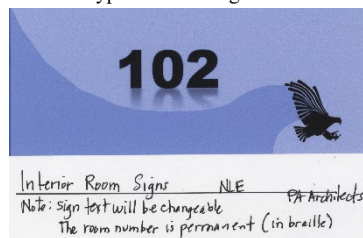
A. ADA-Compliant Interior Signage.

2.3 INTERIOR ROOM SIGNAGE SCHEDULE

A. Style: Vista System V150 curved aluminum frame with:

- ADA Insert; clear, non-glare plastic with ADA compliant Grade 2 Braille, and Black raised tactile lettering 1.25 inches tall. Font Jost.
- Transparency Inserts
- Paper Insert Artwork background include Logo artwork (concept furnished by Architect, see below of this section).
- Provide one sign for each interior door. ADA tactile insert with room number.
- Provide one tactile exit sign for the interior of each exterior door
- Provide signs (two each) for each group Restroom (total of 8 signs).

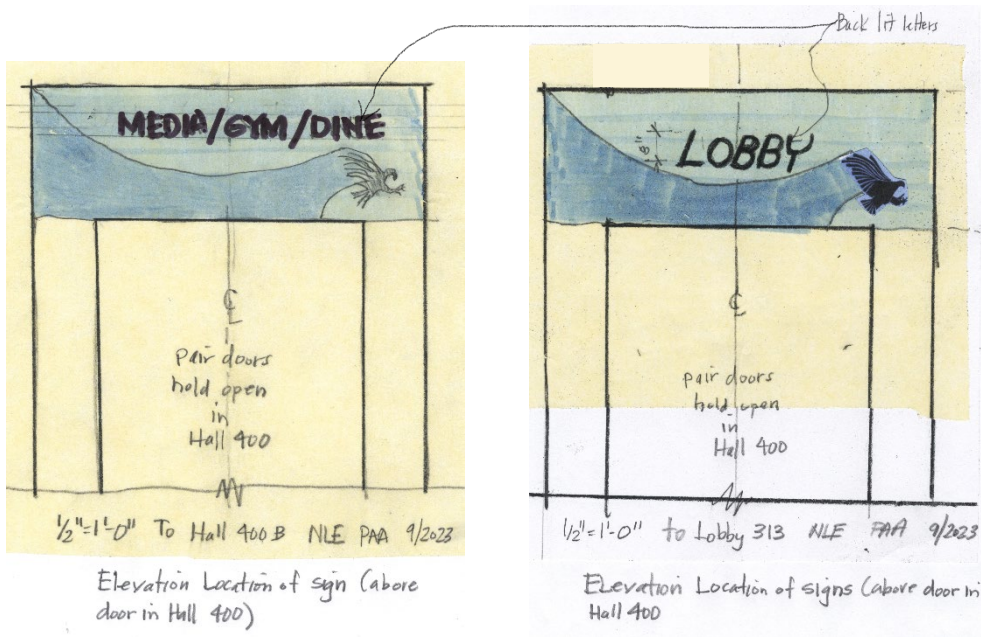
Typical Room Sign



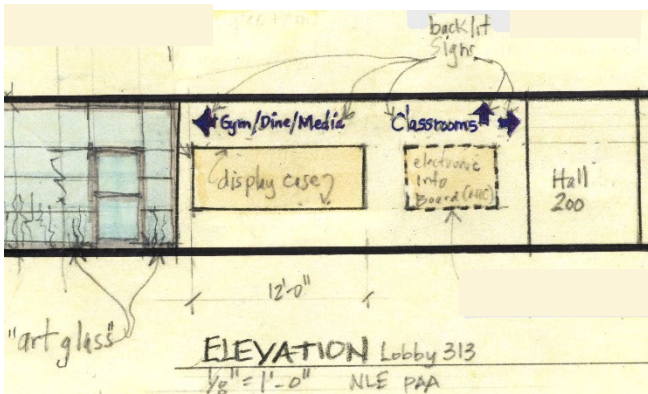
2.4 INTERIOR WAYFINDING SIGNAGE SCHEDULE

A. Style: Raised letters, LED backlit, logo background.

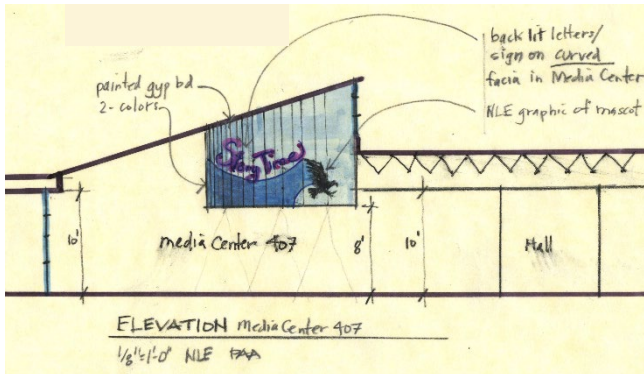
a. Location Hall 400:



b. Location Lobby 313:



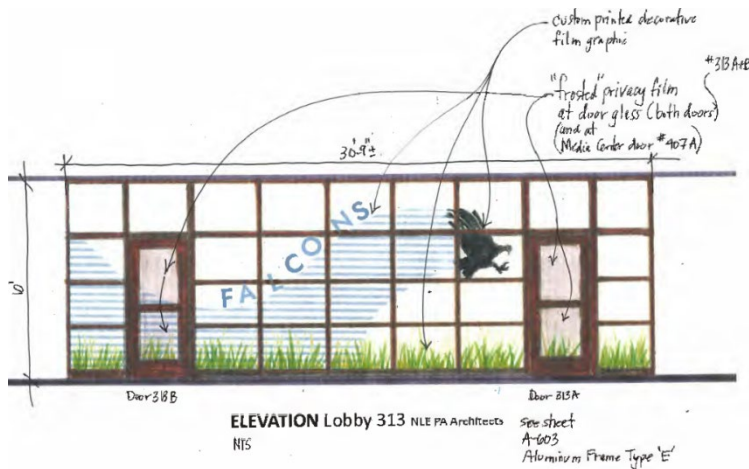
c. Media Center 407:



2.5 INTERIOR GRAPHIC FILM ON GLASS

A. Style: Graphic Film on all glass surfaces (interior), including doors.

a. Location Lobby 313



onate Logo Graphics, Font Jost.

- a. Location: Freestanding building Monument signs with graphics, total of 5; see Drawing AS-101.
 - b. Location: Building Face, two sides, see drawings, Building Elevations.
- B. Style: Plastic Laminate exterior door signs
- a. Location: door signage Rooms 417, 418, 419 (max 18 characters per sign).
- C. Provide all necessary components needed for complete installation of backlighting signage; and connectivity to nearest power supply (see Electrical Drawings for location of nearest power source).

PART 3 -EXECUTION

3.1 EXAMINATION

- A. Examine installation areas to ensure that conditions are suitable for installation.
- B. Examine signage for defects prior to installation. Do not install damaged signage.

3.2 PREPARATION

- A. Verify mounting heights and locations for interior signage will comply with referenced standards.
- B. Clean mounting locations of dirt, dust, grease or similar conditions that would prevent proper installation.

3.3 INSTALLATION

- A. Install signs level, plumb, without distortion, and in proper relationship with adjacent surfaces using manufacturer's recommended standard mounting system.
 - 1. Mount with vinyl foam tape.
 - 2. Mount with screws.
 - 3. Mount with silicone and vinyl foam tape.
- B. Remove adhesive from exposed sign surfaces as recommended by manufacturer.
- C. Clean signs after installation as recommended by manufacturer.

END OF SECTION 10 1400

SECTION 10 14 16 - PLAQUES

PART 1 - GENERAL

1.1 SUMMARY

- A. Cast aluminum, wall mounted building plaque. Contractor shall furnish all supplementary items necessary for proper installation using manufacturer's components. One building plaque to be installed in a location directed by the Architect.

1.2 SUBMITTALS

A. Product Data:

- 1. Submit manufacturer's technical data and installation instructions for plaque.

B. Shop Drawings

- 1. Provide shop drawings for fabrication and erection of sign. Include plan, elevation, and large-scale sections of typical members and components. Show anchors, groups, reinforcement, accessories, layout, installation details, dimensions, material colors, and graphics.
- 2. Provide content list, including large-scale details of wording and layout of lettering.

C. Samples:

- 1. Submit sample of sign form and material showing finishes, colors, texture and design of each sign component.

1.3 QUALITY ASSURANCE

A. Qualifications of Installers

- 1. For actual installation of signage, use only personnel who are thoroughly trained and experienced in the fabrication and installation of the specified products.
- 2. In acceptance or rejection of completed installation, no allowance will be made for lack of skill on the part of the installers.

B. Warranty:

- 1. All product and installation shall be warranted against workmanship and defects for a period of one year from date of installation. Delivery and initial cost considerations shall be detailed, including cost of ongoing maintenance of sign system for a period of one year after completion of initial contact.

1.4 COORDINATION

- A. Contractor shall coordinate all signage product design, selection, color, and size with Architect. Architect shall direct selection of such signage to comply with design guidelines.

1.5 PRODUCT HANDLING

A. Protection:

1. Use all means necessary to protect materials before, during, and after installation and to protect the installed work of other trades.

B. Replacements:

1. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. A.R.K. Ramos
- B. Best Manufacturing Co.
- C. Spanjer Brother Inc.
- D. OMC, Bryan, TX.
- E. Mathews Bronze Division
- F. Subject to compliance with requirements, comparable products may be used based on Architect's review of submittals per Section 01 25 00 "Substitution Procedures".

2.2 MATERIALS

- A. Cast aluminum, letters and linework to be raised 1/8" above background and satin polish.

2.3 PLAQUE DESIGN COMPONENTS

- A. Size: 24" width x 24" height.
- B. Background Texture, Border Style and Background Color: Chosen by Architect from manufacturer's standard selection.
- C. Mounting Method: Concealed type approved by Architect.

2.4 PLAQUE TYPE STYLE

- A. Letter Style: Times New Roman, case selection and size are per layout drawing to be submitted by Contractor for Architect's approval.
- B. Copy:
 - 36 point, up to 40 letters maximum.
 - 24 point, up to 40 letters maximum.
 - 2 columns of 14 point, up to 300 letters maximum.

2.5 FINISHES

- A. Background with sprayed acrylic Laquer finish. Color to be selected by the architect from the manufactures standard color line.
- B. Finished plaque to receive 2 coats of clear acrylic laquer.

2.6 OTHER MATERIALS

- A. All other materials not specifically described but required for a complete and proper installation shall be provided by the contractor, subject to approval of Architect.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Inspection
 - 1. Prior to all work of this section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
 - 2. Verify that the plaque may be installed in complete accordance with the original design, the approved Shop Drawings, and the manufacturer's written instructions. The Contractor shall visit the site of work and examine the premises so as to fully understand all of the existing conditions relative to the work. No increase in cost or extension of performance time will be considered for failure to know site conditions.
- B. Discrepancies
 - 1. In the event of discrepancy, immediately notify the Architect.
 - 2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.2 INSTALLATION

- A. Install per approved materials list and schedule, and per manufacturer approved written instructions.
- B. Install plaque level, plumb, and true to sign edges.

END OF SECTION 10 14 16

SECTION 10 1900 - CUBICLE CURTAIN TRACK SYSTEMS AND CURTAIN

PART 1 -

PART 2 - GENERAL

2.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

2.2 SUMMARY

- A. This Section includes the following:
 - 1. Curtain tracks and curtain carriers.
 - 2. Cubicle curtains.
- B. Related Sections include the following:
 - 1. Division 6 Section "Rough Carpentry."
 - 2. Division 9 Section "Gypsum Board Assemblies, Acoustical Panel Ceilings, Acoustical Tile Ceilings."

2.3 PERFORMANCE REQUIREMENTS

- A. Curtains: Provide curtain fabrics with the following characteristics:
 - 1. Fabrics are launderable to a temperature of not less than 160 deg F (71 deg C).
 - 2. Fabrics are flame resistant and are identical to those that have passed NFPA 701 when tested by a testing and inspecting agency acceptable to authorities having jurisdiction.
 - a. Identify curtains with size.

2.4 SUBMITTALS

- A. Product Data: Submit copies of manufacturer's detailed technical data for materials, fabrication and installation of cubicle curtain tracks and curtains specified herein. Include catalog cuts of fittings, anchors, fastenings and accessories.
- B. Shop Drawings: Show layout and types of cubicles, sizes of curtains, number of carriers, and conditions requiring accessories.
- C. Samples for Verification: Full-size units of each type of the following products:
 - 1. Curtain Fabric: 12-inch square swatch or larger Sample as required showing complete pattern repeat, from dye lot used for the Work, with specified treatments applied. Mark top and face of material.
 - 2. Mesh Top: Not less than 4 inches square.

3. Curtain Track: Not less than 4 inches long.
 4. Curtain Carrier: Full-size unit.
- D. Cubicle Schedule: Use same room designations as indicated on Drawings.
- E. Product Certificates: Signed by manufacturers of tracks and curtains certifying that products furnished comply with requirements.
- F. Maintenance Data: For tracks and curtains to include in maintenance manuals specified in Division 1.

2.5 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install cubicles until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
- B. Field Measurements: Where cubicles are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 3 - PRODUCTS

3.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
1. Basis of Design: AR Nelson, 3555 Scarlet Oak Blvd., St. Louis, MO, 63122, 800-377-6625
 2. C/S Cubicle Curtains
- B. Subject to compliance with requirement, products of equal performance may be used based on the architect's review of submittals per Section 01 6300 "Product Substitution Procedures".

3.2 CURTAIN TRACKS

- A. Extruded-Aluminum Track No. 1200CT: 1-3/8 inches wide by 3/4 inch high aluminum track.
- B. Track Accessories: End caps, connectors, end gates, coupling and joining sleeves, wall brackets, ceiling flanges, and other accessories.
1. Suspended Track Support: Not less than 1-inch OD aluminum tube.
 2. End Stop: Removable.
- C. No. 20 Breakaway Carrier: Three-piece nylon wheels, body and hook (recommended for use in No. 1200CT Cubicle Track).

3.3 CURTAINS

- A. Curtain Fabric: Cubicle manufacturer's standard, as follows:
 - 1. Fiber Content: 100 percent polyester, inherently and permanently flame resistant.
 - 2. Products: Subject to compliance with requirements, provide the following:
 - a. Nelson Cubicle Curtains
 - 1) Pattern: As selected by Architect from manufacturer's full range of available fabrics.
 - 2) Color: As selected by Architect from manufacturer's full range of available colors.
- B. Mesh Top: White nylon mesh with 1/2" diagonal openings.
- C. Curtain Grommets: Two-piece, rolled-edge, rustproof, nickel-plated brass; spaced not more than 6 inches o.c.; machined into top hem.

3.4 CURTAIN FABRICATION

- A. Fabricate curtains to comply with the following requirements:
 - 1. Width: Equal to track length from which curtain is hung plus 10 percent added fullness, but not less than 12 inches added fullness.
 - 2. Length: Equal to floor-to-ceiling height, with 20-inch mesh top, and minus distance above finished floor at bottom as follows:
 - a. Cubicle Curtains: 14 inches.
 - 3. Top Hem: Not less than 1 inch and not more than 1-1/2 inches wide, triple thickness, reinforced with integral web, and double lock stitched.
 - 4. Mesh Top: Top hem not less than 1 inch and not more than 1-1/2 inches wide, triple thickness, reinforced with integral web, and double lock stitched. Double lock stitch bottom of mesh directly to 1/2-inch triple thickness, top hem of curtain fabric.
 - 5. Bottom Hem: 1 inch double thickness and single lock stitched.
 - 6. Side Hems: Not less than 1/2 inch and not more than 1-1/4 inches wide, with double turned edges, and single lock stitched.
 - 7. Vertical Seams: Not less than 1/2 inch wide, double turned and double stitched.

PART 4 - EXECUTION

4.1 INSTALLATION

- A. General: Install tracks level and plumb, according to manufacturer's written instructions. Provide track fabricated from one continuous length up to 16 feet.
 - 1. Curtain Track Mounting. Surface.
- B. Surface Track Mounting: Fasten surface-mounted tracks at intervals of not less than 24 inches. Fasten support at each splice and tangent point of each corner. Center fasteners in track to ensure unencumbered carrier operation. Attach track to ceiling as follows:

1. Mechanically fasten directly to bottom of concrete deck with anchor screws.
 2. Mechanically fasten directly to finish ceiling with toggle bolts.
 3. Mechanically fasten to suspended ceiling grid with screws.
- C. Track Accessories: Install end caps, connectors, end gates, coupling and joining sleeves, and other accessories as required for a secure and operational installation.
- D. Curtain Carriers: Provide curtain carriers adequate for 6-inch spacing along the full length of the curtain.
- E. Curtains: Hang curtains on each curtain track.
- 4.2 DEMONSTRATION
- A. Train Owner's maintenance personnel to adjust, operate, and maintain safety- loading units.
1. Train Owner's maintenance personnel on procedures and schedules for changing curtains and maintaining cubicles.
- 4.3 PROTECTION
- A. Protect installed recessed track openings with non-residue adhesive tape to prevent debris from ceiling finishing operations from impeding carrier operation.

END OF SECTION 10 1900

SECTION 10 2113.13 –PHENOLIC TOILET COMPARTMENTS

PART 1 -GENERAL

1.1 SECTION INCLUDES

- A. Color Through Phenolic Toilet Compartments with Floor-to-Ceiling Mounting Style.

1.2 RELATED WORK

- A. Section 06 1000 - Rough Carpentry for wall and ceiling backing for anchoring partitions and brackets.
- B. Section 10 2800 - Toilet Accessories

1.3 REFERENCES

- A. ASTM A 24 0/A 240M – Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 3300 v.3.1.
- B. Product Data: Manufacturer’s data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
 - 4. Show anchorage, accessory items, and finishes.
- C. Shop Drawings: Show layout, door swings, clearance to fixtures, hardware, and methods of anchoring.
- D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer’s full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, two samples, minimum size of 6 inches (150 mm) square, representing actual product, color, and patterns.
- F. Operations and Maintenance Data: At completion of the project, furnish to the Owner two (2) copies of an Owner’s Operation and Maintenance Manual.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Mark packaging with numbering or nomenclature used on shop drawings.
- B. Store products in manufacturer’s unopened packaging until ready for installation.

1.6 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer’s absolute limits. The Manual shall consist of a hard cover three ring binder with the project name in the front. Include in the manual the following information:

Maintenance instructions, Catalogue pages for each product, Name/Address and phone number of the Manufacturer and their Sales Agent, Copy of the final shop drawings.

1.7 WARRANTY

- A. The toilet partition manufacturer shall guarantee all phenolic partitions against delamination, breakage, or corrosion for 25 Years from date of acceptance by Owner. If the material is found to be defective during that period, the material shall be replaced free of charge. No credits or allowances shall be issued for any labor or expenses relating to the replacement of components covered under the warranty.

PART 2 -PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Design is based on Accurate Partitions Corporation, P.O. Box 287, Lyons IL 60534-0287, 707-442-7439, www.accuratepartitions.com.
- B. Subject to compliance with requirement, products of equal performance may be used based on the Architect's reviews of submittals per Section 01 6300 Product Substitution Procedures v.3.1.

2.2 CONSTRUCTION DESIGN

- A. Partitions shall be anchored to the floor and overhead structural member.
- B. The pilaster shall be secured to the floor with a 3/8" x 1" mounting bar and overhead structural member with a 3/8" x 1" mounting bar. Each mounting bar shall be anchored to the building structure with 3/8" wedge anchors and threaded rods. The mounting system at the top and bottom of the pilaster shall be concealed by type 304 stainless steel trim shoes with a #4 finish.

2.3 MATERIALS AND PRODUCTS

- A. Toilet Compartments: Phenolic Partitions Floor-To-Ceiling Anchored.
 - 1. Compartment Depth and Width: As indicated on drawings
 - 2. Door Width: 30 inches, minimum; at wheelchair accessible compartments, 36 inches, minimum.
 - 3. Doors and Panels
 - a. Top of door and panel, 70 inches above finished floor.
 - b. Bottom of door and panel, 12 inches above finished floor.
 - 4. Door and Panel Type:
 - a. Style: Standard (58-inch-high doors and panels).
 - 5. Pilaster Width: As required to fit space; minimum 6 inches.
 - 6. Pilaster Height: As required to fit space; maximum 108 inches.

2.4 MATERIALS

- A. Doors, panels and pilasters shall be fabricated from solid phenolic core and decorative surface sheet on both faces. Phenolic core shall be the same color as the decorative surface sheets. All

components shall be water-resistant, impact resistant, scratch resistant and graffiti resistant. Rough edges shall be machine sanded with a 45-degree radius edge.

1. Doors: $\frac{3}{4}$ inch thick solid phenolic material.
2. Panels: $\frac{3}{4}$ inch thick solid phenolic material.
3. Pilasters: $\frac{3}{4}$ inch solid phenolic material.
4. Urinal Screens: $\frac{1}{2}$ " thick solid phenolic material.
5. Color: To be selected by Architect from Manufacturer's full range of phenolic colors.

B. Mounting Hardware:

1. Cast stainless steel stirrup brackets with brushed finish shall be secured to walls and to pilasters with stainless steel tamper resistant fasteners. Panels shall be through bolted with tamper resistant barrel nuts and shoulder screws.
2. Headrail: Shall be satin finish, extruded anodized aluminum -065 inches thick with anti-grip profile.

C. Pilaster Shoes: Type 304 stainless steel, with #4 satin finish.

1. Shoes are hemmed top and bottom for rigidity.

D. Door Hardware:

1. Hinge shall be gravity cam-action that permits door to return to a preset position when not locked. Hinge strike/keeper and slide latch shall be brushed aluminum to resist corrosion and through bolted with tamper resistant barrel nuts and shoulder screws. Cam-action hinge shall allow access by lifting the door from the bottom.

E. Hinge Side Gap Filler:

1. Hinge Side Gap Filler:
 - a. Extruded aluminum channel fills the sightline gap between the door and pilaster; finished to match door and pilaster finish.

F. Door Latches: Concealed, mortised turn latch with face plate flush with edge face of door; exterior turn slot for emergency access.

1. On wheelchair access doors provide turn lever that does not require fingertip grip.
2. Material: Chrome plated zinc, polished finish.

G. Hooks: Hook; rubber tip; one on each door.

1. Material: Chrome plated zinc, polished finish.

H. Door Pulls for Doors: Pulls mounted on inside.

1. Material: Chrome plated zinc, polished finish.

I. Door Stops for Doors: Stops mounted on wall to stop swinging.

1. Material: Chrome plated zinc, polished finish.

J. Fasteners: Provide fasteners of type appropriate to members being fastened and substrate to which they are being fastened.

PART 3 -EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Check areas scheduled to receive compartments for correct dimensions, plumbness of walls and soundness of walls that would affect installation of mounting brackets.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions in locations indicated on drawings. Ensure that the proper backing is in place at all anchorage locations. Provide blocking at ceiling anchorage as shown in the drawings.
- B. Adjust hardware for proper operation of doors.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

3.5 ADJUSTMENT AND CLEANING

- A. Adjust hardware for proper operation after installation.
- B. Clean exposed surfaces of compartments, hardware, and fittings.

END OF SECTION 10 2113.13

SECTION 10 2613 - IMPACT - RESISTANT WALL PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provision of the Contract including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.

1.2 SUMMARY

- A. This section includes the furnishing and installing of stainless steel corner guards as indicated on the drawings.

1.3 SUBMITTALS

- A. Submit the following in accordance within the conditions of Contract and Division 1 Specifications Sections.
 - 1. Product data for each type of corner guard specified.
 - 2. Shop drawings indicating mounting details with the appropriate fasteners for specific project substrates.
 - 3. Samples for verification purposes of corner guard 8" long, in full size profiles of each type and color indicated.
 - 4. Manufacturer's Standard Warranty against material and manufacturing defects for a period of three years from the date of acceptance.

PART 2 - PRODUCT

2.1 ACCEPTABLE MANUFACTURERS

- A.
 - 1. C/S Group
 - 2. Korogard
 - 3. Wallguard.com
- B. Subject to compliance with requirements, products of equal performance may be used based on the Architect's review of submittals per Section 01 6300 "Product Substitution Procedures."
- C. Material: #304 Stainless Steel, 16 gauge, 2" x 2" x 4'-0" length, 1/8" radius, standard #4 satin finish.
- D. Furnish and install 132 corner guards in locations as directed by the architect.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Locate stainless steel corner guards as directed by architect for appropriate substrate, and in compliance with the manufacturer's instructions. Install stainless steel corner guards level, and plumb, with surfaces free from distortion or other defects in appearance.
- B. Application: Apply to wall corner with beveled screws for guards that have pre-drilled mounting holes, per manufacturer's written instructions.
- C. Cleaning: At completion of the installation, clean surfaces in accordance with manufacturer's instructions.

END OF SECTION 10 2613

SECTION 10 2800 - TOILET ACCESSORIES

PART 1 -GENERAL

1.1 RELATED WORK DESCRIBED ELSEWHERE

- A. Cold Formed Metal Framing: Section 05 4000
- B. Non-Structural Metal Framing: Section 09 2216
- C. Gypsum Board: Section 09 2100
- D. Tile: Section 09 3000

1.2 DESCRIPTION OF WORK

- A. Extent of each type of toilet accessory is shown on the drawings and the schedules, and listed herein.

1.3 QUALITY ASSURANCE

- A. Accessory Locations: Coordinate accessory locations with other work to avoid interference and to assure proper operations and servicing of accessory units.
- B. Products: Provide products of same manufacturer for each type of accessory unit and for units exposed in same areas, unless otherwise acceptable to the Architect.

1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data and installation instructions for each toilet accessory.
- B. Setting Drawings: Provide setting drawings, templates, instructions, and directions for installation of anchorage devices in other work.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver accessories to site until rooms in which they are to be installed are ready to receive them.
- B. Pack accessories individually in a manner to protect accessory and its finish.

1.6 PROTECTION

- A. Protect adjacent or adjoining finished surfaces and work from damage during installation of work of this section.

PART 2 -PRODUCTS

2.1 MATERIALS

- A. Stainless Steel: AISI Type 302/304, with satin No. 4 finish, 22 gage minimum, unless otherwise indicated.

- B. Sheet Steel: Cold rolled, commercial quality ASTM A 366, 20-gage minimum, unless otherwise indicated. Surface preparation and metal pretreatment as required for applied finish.
- C. Galvanized Steel Sheet: ASTM A 527, G60.
- D. Mirror Glass: FS DD-G-451, Type I, Class 1, Quality Q2, 1/4" thick with silver coating, copper protective coating, and non-metallic paint coating.
- E. Galvanized Steel Mounting Devices: ASTM A 386 hot-dip galvanized after fabrication.
- F. Fasteners: Screws, bolts, and other devices of same material as accessory unit or of hot dipped galvanized steel where concealed. Expansion shields to be fiber, lead, or rubber as recommend by accessory manufacturer for components and substrate.
- G. Adhesive: Epoxy type contact cement.
- H. Acceptable Manufacturers:
 - 1. American Specialties
 - 2. Bobrick
 - 3. Bradley

2.2 SCHEDULE OF ACCESSORIES (DESIGN BASED ON BOBRICK OR AS LISTED BELOW):

- A. Grab Bar: Bobrick B-6806 x 36 (horizontal)
- B. Grab Bar: Bobrick B-6806 x 42 (horizontal)
- C. Toilet Tissue Dispenser: Bobrick B-2890
- D. Soap Dispenser: Owner furnished and installed
- E. Mirror: Bobrick B-290-1830
- F. Paper Towel Dispenser: Owner furnished and installed
- G. Sanitary Napkin Disposal: Bobrick B-254
- H. Grab Bar: Bobrick B-6806 x 18 (vertical)
- I. Toilet Tissue Dispenser: Bobrick B-27460 (dispenser for two rolls)
- J. Mop Rack: Bobrick B-224x36, (provide one in each janitor room).
- K. Mirror: Bobrick B-290-1860
- L. Waste Receptacle: 15-gallon, free standing, Bobrick B-2300 (provide one per toilet room)
- M. Double Locking Narcotics Cabinet: Product #80001 available through MacGill Nursing Discount Supplies. Email: macgill.com.
- N. Grab Bar: Bobrick B-68137 (two wall wheelchair compartment)
- O. Folding Shower Seat: Bobrick B-5191
- P. Shower Curtain Rod: Bobrick B-6047-36 Extra Heavy-Duty Shower Curtain Rod.

- Q. Shower Curtain: Bobrick 204-2. Provide Bobrick shower curtain hooks (Bobrick 204-1) as required for each shower curtain.

2.3 FINISHES

- A. Chrome/nickel plating: Satin finish.
- B. Stainless steel: No. 4 Satin luster finish.
- C. Shop primed ferrous metals: Pre-treat and clean, spray apply one coat primer and bake.
- D. Enamel: Pretreat to clean condition, apply one coat primer and minimum two coats electrostatic baked enamel.

2.4 FABRICATION

- A. General: Stamped names or labels on exposed faces of toilet accessory units are not permitted except where otherwise indicated. Wherever locks are required for a particular type of toilet accessory, provide the same keying throughout project. Furnish two keys for each lock.

PART 3 -EXECUTION

3.1 PREPARATION

- A. Deliver inserts and rough-in frames to jobsite at appropriate time for building-in. Provide templates and rough-in measurements as required.

3.2 INSPECTION

- A. Examine substrates, previously installed inserts, and anchorages necessary for mounting of toilet accessories, and other conditions under which installation is to occur for conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected.

3.3 INSTALLATION

- A. Install fixtures, accessories, and items in accordance with manufacturer's printed instructions.
- B. Install true, plumb, and level, securely, and rigidly anchored to substrate.
- C. Use tamper-proof fasteners.

3.4 3ADJUST AND CLEAN

- A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly.
- B. Clean and polish all exposed surfaces after removing protective coatings.

END OF SECTION 10 2800

SECTION 10 4100 - DISPLAY CASE

PART 1 -GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, general project requirements and Division 01 Specification Sections apply to this Section.
- B. Documents specifically related to this section include:
 - 1. Section 06 1000 - Rough Carpentry.
 - 2. Section 09 9100 - Painting.
 - 3. Division 16 - Electrical Connections and Requirements.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. B 221, Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - 2. C 1048, Specification for Heat-Treated Flat Glass-Kind HS, Kind FT Coated and Uncoated Glass.
 - 3. D1752, Specification for cork sheet, bulletin board.

1.3 SUBMITTALS

- A. Product Data:
 - 1. Manufacturer's specifications and other data needed to prove compliance with specified requirements.
 - 2. Manufacturer's installation instructions.
- B. Shop Drawings: Provide shop drawings showing all required field measurements, all details and elevations, plans and sections required to indicate all conditions.
- C. Samples: Include actual material or color charts showing manufacturer's full range of colors.
- D. Contract Closeout Submittals: Maintenance Data: Manufacturer's cleaning and maintenance instructions covering both routine and long-term operations.

1.4 PROJECT CONDITIONS

- A. Environmental Requirements: General contractor to maintain proper climate before, during, and after installation.
- B. Field Measurements: Verify all field measurements prior to fabrication.

1.5 WARRANTY

- A. Warrant the work specified herein for "one year" against becoming unserviceable or causing an objectionable appearance resulting from either defective or non-conforming materials or workmanship.
- B. Warranty shall cover replacement of defective workmanship and product defects such as but not limited to deterioration of material or finish and difficult operation. Warranty does not include cost of removal or reinstallation.

PART 2 -PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Specifications are based on named products manufactured by Poblocki Sign Company; (800) 776-7064.
- B. Subject to compliance with requirements, products of equal performance may be used based on the Architect's review of submittals per Section 01 6300 "Product Substitution Procedures."

2.2 MATERIALS

A. Materials

- 1. Aluminum Extrusions: Meeting ASTM B221, alloy 6063-T5.
- 2. Aluminum Panels: Meeting ASTM B209, minimum 0.090" (2.28mm) thick.
- 3. Glass: ASTM C 1048, fully tempered, type I clear with minimum 0.25" (6mm) thick.
- 4. Tackable Surface: ¼" thick linoleum grade cork with burlap backing.

2.3 FABRICATION

A. Display Case Front

- 1. Description: 6063-T5 extruded aluminum alloy in accordance with ASTM B221; minimum 0.090 inch thick for window frame sill, and a minimum of 0.072 inch thick for all other members including frame, panels, and horizontal mullions. Aluminum extrusion mitered and assembled with concealed corner angles.
- 2. Frame Depth: minimum 2.0 inches
- 3. Size: refer to Floor Plan for three (3) locations, field verify.
- 4. Trim: as selected from manufacturers standard aluminum decorative product lines.
- 5. Glazing: Minimum ¼ inch clear tempered glass in accordance with Section 08800.
- 6. Door Profiles:
 - a. Sliding aluminum channel with "H" bars on top and bottom equipped with ball bearing rollers and ground in finger pulls. Fully aluminum framed glass doors with a 2 ½" top and bottom track required for all sliding doors over 66" tall.
- 7. Locks: All sliding doors to be equipped with flush mounted plunger locks keyed alike. All hinged doors to be equipped with flush mounted cam locks keyed alike.

B. Mounting Options

- 1. Recessed: Recess mount displays to wall structure through back plate or case sides.

C. Display Case Cabinet

- 1. Aluminum cabinet fully factory assembled with .090" aluminum walls for recessed, wall-mounted, or freestanding applications. Background to be .090" aluminum (exterior use) or ¾" AC plywood (interior use). No visible fasteners or knocked-down cases accepted.

D. Interior Cabinet Finish:

- 1. Fabric over ¼" natural cork at background with decorative plastic laminate at sides, top, and bottom. Finish and colors as selected by Architect from manufacturer's standard options.

E. Illumination

- 1. Removable light fixture located above cabinet in aluminum frame. High-output T-8 fluorescent lamps with dual 120 or 277 voltage ballast and plastic egg-crate diffuser.

F. Shelving

1. Shelves: ¼” thick clear Hz tempered glass with edges ground, polished, or swiped as required. Depth of shelves to be 2” less than total cabinet depth or as indicated on drawings.
2. Standards: Surface mounted “T” type channel. Minimum standard KV83 up to KV 87.
3. Brackets: KV 160 or Heavy-duty KV 187 with lever lock as required for depths over 12”.

G. Frame Finish

1. Aluminum with anodized finish: Clear.

PART 3 -EXECUTION

3.1 PREPARATION

- A. Coordinate dimensional requirements with adjacent construction prior to fabrication.
- B. Coordinate electrical requirements and locations.

3.2 EXAMINATION

- A. Verification of Conditions:
 1. Verify that surfaces to receive units are true and plumb.
 2. Verify that blocking and backings have been installed as required for anchorage.
 3. Advise responsible contractor of unacceptable conditions.

3.3 INSTALLATION

- A. Install display units in locations scheduled or noted on the drawings in accordance with approved shop drawings and manufacturer's installation instructions.

3.4 CLEANING, PROTECTION AND REPAIR

- A. Clean display unit of dirt, dust, and grease after installation.
- B. Protect finished installation from damage from work of other trades, such as plastering, gypsum wall board, painting, etc. Repair damaged work to satisfaction of Architect or replace work at no additional expense to Owner.

END OF SECTION 10 4100

SECTION 10 4400 - FIRE PROTECTION SPECIALTIES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Fire fighting devices described in this section consist of portable fire extinguishers and cabinets located where shown on the drawings and as required by code. Contractor shall furnish all supplementary items necessary for proper installation using manufacturer's components.

1.2 QUALITY ASSURANCE

A. Fire Extinguishers:

1. Conform to NFPA 10 requirements for portable fire extinguishers.
2. Provide fire extinguishers, cabinets, and accessories by a single manufacturer.
3. Conform to UBC 43-6 (ASTM E 814-83) for fire resistive wall performance, where necessary.

B. Qualifications for Installers:

1. For installation and servicing of the work of this Section, use only personnel who are completely trained and experienced in the required skills and who are completely familiar with the manufacturer's recommendations and all pertinent code requirements.

1.3 REFERENCES

- A. In addition to complying with all pertinent codes and regulations, all fire fighting devices shall be approved by FM or Underwriters' Laboratories, Inc., shall be labeled, and shall be approved by the Fire Marshall.

1.4 PRODUCT HANDLING

A. Protection

1. Use all means necessary to protect fire fighting devices before, during, and after installation and to protect the installed work and materials of all other trades.

B. Replacements

1. In the event of damage, immediately make all repairs and replacements necessary to the approval of and at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 FIRE EXTINGUISHERS/CABINETS

A. General

1. Design is based on products manufactured by:
JL Industries Incorporated

4450 W. 78th Street Circle
Bloomington, MN 55435
(952) 835-6850

2. Subject to compliance with requirements, comparable products of the following may be substituted based on Architect's review of submittals per Section 01 6300 "Product Substitution Procedures".
 - a. Larsen's Manufacturing Co.
 - b. Potter Roemer, Inc.

B. Product Characteristics: Multi-Purpose Chemical

1. Model #: Cosmic 10E.
2. Type Extinguisher: Fluidized and siliconized mono ammonium phosphate powder, 10 lb. capacity, UL Rating 4A60BC
3. Cabinet Series: Academy Series 1026, Fire-FX Fire Rated Tub Option. (F5) in all fire rated walls. Refer to drawings for wall fire ratings.
4. Trim: 1 ½" return trim
5. Rough Opening: 12 ½" x 26 1/8" x 5 3/8"
6. Door Style: Contemporary V
7. Material: Clear aluminum with clear tempered glass.
8. Locations: All locations indicated in the drawings, except Cooking 405G.

C. Product Characteristics: Class K Wet Chemical

1. Model #: Saturn 25K or equal performance.
2. Type Extinguisher: Wet Chemical, 25 lb. capacity, UL Rating K.
3. Bracket: MB810
4. Nominal Dimensions: 11" diameter X 25" height
5. Location: Cooking 405G

D. Product Characteristics: Multi-Purpose Chemical

1. Model #: Cosmic 2 1/2E.
2. Type Extinguisher: Fluidized and siliconized mono ammonium phosphate powder, 2.5 lb. capacity, 1A-10BC UL Rating
3. Bracket: Standard Mark Bracket
4. Locations: All locations indicated in the drawings.

2.2 OTHER MATERIALS

- A. All other materials not specifically described but required for a complete and proper installation shall be provided by the Contractor, subject to the approval of the Architect.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Coordination

1. Coordinate with all other trades as required to ensure proper and adequate provision in framing and wall covering for the installation of recessed cabinets in the locations required.

B. Inspection

1. Inspect all cabinet locations and verify that all necessary provisions have been made.

3.2 INSTALLATION

- A. Install the fire extinguisher cabinets and brackets where indicated on the Drawings and in full accordance with all pertinent regulations and the manufacturer's recommendations.

END OF SECTION 10 4400

SECTION 10 5113 - METAL LOCKERS

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Integrated-frame all-welded steel lockers.

1.2 RELATED SECTIONS

- A. Section 06 1000 – Rough Carpentry: Wood ground and furring for anchoring lockers.
- B.. Section 09 3000 – Tiling

1.3 REFERENCES

- A. ASTM A 653 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- B. ASTM A 1008 – Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

1.4 SUBMITTALS

- A. Comply with Section 01 3300 – Submittal Procedures.
- B. Product Data: Submit manufacturer's product data and installation instructions.
- C. Shop Drawings: Submit manufacturer's shop drawings, indicating construction, materials, dimensions, door frames, doors, handles, locks, ventilation, options, accessories, finish, locker layout, anchoring, and installation details.
- D. Samples: Submit manufacturer's standard color samples.
- E. Warranty: Submit manufacturer's standard warranty.

1.5 QUALITY ASSURANCE

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage: Store materials in clean, dry area indoors in accordance with manufacturer's instructions.
- C. Handling: Protect materials and finish during handling and installation to prevent damage.

PART 2 – PRODUCTS

2.1 MANUFACTURER

Product design and performance based on:

- A. Lyon Workspace Products, PO Box 671, Aurora, Illinois 60507.
Toll Free (800) 323-0082. Phone (630) 892-8941. Fax (800) 367-6681.
Web Site: www.lyonworkspace.com. E-Mail lyon@lyonworkspace.com.
- B. Available Manufacturers, provided products are of equal performance:
 - 1. De Bourgh
 - 2. Penco Products, Inc.
 - 3. AJW Architectural Products “Standard Series”

2.2 INTEGRATED-FRAME ALL-WELDED STEEL LOCKERS

- A. Model: Integrated-Frame All-Welded Lockers.
- B. Style: Single-tiered lockers.
- C. Locker Size: 12” wide x 12” deep x 60” high opening size per tier.
- D. Locker Configuration: As shown on drawings.
- E. Construction: All welded. Pre-assembled, with seams and joints welded. Bolts, screws, and rivets shall be used in assembly of locker bodies.
- F. Material:
 - 1. Steel: ASTM A 1008, Class I, mild-annealed, cold-rolled steel, free from surface imperfections
 - 2. Fasteners: Zinc plated or other comparable rust-retardant treatment.
- G. Body:
 - 1. 16-gauge steel.
 - 2. Flanged to give double thickness of metal at back, top, and bottom of sides, top, and bottom.
 - 3. Backs: 1-piece for each locker module, 18-gauge steel.
 - 4. Tops: Sloped 30 degrees, 1-piece for each locker module, 16-gauge steel.
 - 5. Bottoms: 1-piece for each locker module, 16-gauge steel, with front and back channel reinforcements.
 - 6. Seams and Joints: MIG welded.
- H. Door Frame:
 - 1. Integral part of sides, top, and bottom of locker.
 - 2. Side Containing Latch: Additional flange to form door strike.
 - 3. Tops, Bottoms, and Intermediate Bottoms: Additional flange to form door strike at top and bottom of door.
- I. Doors:

1. 1-piece, 14-gauge steel.
2. Both vertical edges formed into channel-shaped formation. Top and bottom flanged at 90-degree angle.
3. Double-Tier Locker Doors: 18-gauge steel pan stiffener welded on 6-inch centers inside channel-shaped formation of hinge side of door. Standard for single-point latch.
 - a. Door Thickness: 1 inch.

J. Ventilation:

1. Diamond-shaped perforations in portion of door not covered by stiffener panel.

K. Hinges:

1. Type: Full-height continuous hinges.
2. Attachment: Welded to door and riveted to locker body on 6-inch maximum centers.

L. Single-Point Latch:

1. Single, double, triple, and multiple-tier lockers.
2. 1-point locking device with 11-gauge steel lock clip for attaching padlock and 10-gauge steel security finger.
3. No moving parts.
4. Door held closed by magnetic catch.
5. Triangular-Shaped Reinforcement: Welded to lock clip support and locker side.
6. Handles: Provided with lock hole filler to permit use of built-in key or combination lock.
7. Pan Stiffener: Minimum of 1/3 door width on 12-inch and wider doors.

M Handles:

1. Tamper-Guard Handles:
 - a. Single, double, and triple-tier lockers.
 - b. Chrome-plated, die-cast zinc alloy, with minimum tensile strength of 40,000 psi.
 - c. No moving parts shall operate against outside surface of locker.
 - d. Padlock Attachment: Integral part of lift, attached directly to locking bar and protected by fixed-handle housing.
 - e. Built-in padlock strike.
2. Door Pulls:
 - a. Multiple-tier lockers.
 - b. 16-gauge steel door pull with padlock attachment, when not used with built-in locks.
 - c. Locks: Built-in combination locks added to right of turn handle.
3. Multiple-Tier Lockers: 1-point locking device with 11-gauge steel lock clip for locking with padlocks, built-in key, or combination locks. 16-gauge lock-hole filler/pull attached to door for use with padlocks.

N. Coat Hooks:

1. 1 double-prong ceiling hook and 2 single-prong wall hooks.
2. Steel rod stock with ball points for snag-free use.
3. Attachment: Attached with rivets and welded.

4. Finish: Zinc-plated or comparable rust-retardant treatment. Painted to match locker color.

2.3 ACCESSORIES

A. Number Plates:

1. Aluminum.
2. Size: 2-3/4 inches wide by 1 inch high.
3. Numbers: Clearly etched numbers a minimum of 3/8 inch high.
4. Attachment: Attach in pre-punched holes near top of doors.

B. Locks: Integral Padlock attachment.

C. Bottoms: Unpainted stainless steel.

D. Bases: Front and end closed base, 4 inches high.

E. Floor Anchoring: Anchor lockers to floor in accordance with manufacturer's instructions.

F. Closures and Fillers:

1. Top closures, closures strips, front expansion fillers, and fillers.
2. Fill spaces between 2 lockers or between lockers and walls as required for proper fit.

G. End Panels:

1. End Cover Panels: 16-gauge steel, construction bolt heads exposed at perimeter.
2. End Finishing Panels: 16-gauge steel, no bolt heads exposed.

H. Recess Trim:

1. End and Top Recess Trim for Lockers to be Placed in Wall Recesses: 18-gauge formed steel with 2-3/4-inch wide face. Attached to locker sides and tops.
2. Top Recess Trim: Approximately 6'-0" lengths with 6-inch overlapping slip joints.
3. End Recess Trim: 2-3/4 inches higher than lockers and lap over ends of top recess trim for neat joint at top of corners.

2.4 FINISH

A. General: Factory apply finish in accordance with manufacturer's instructions.

B. Standard Finish: Exposed steel parts shall be thoroughly cleaned, given bonding and rust-inhibitive phosphate treatment, and electrostatically sprayed with powder coat. Baked-on finish.

C. Color: To be selected by the Architect from the Manufacturer's Standard color chart.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive lockers. Notify Architect if areas are not acceptable. Do not begin installation until unacceptable conditions have been corrected.

3.2 INSTALLATION

- A. Install lockers in accordance with manufacturer's instructions at locations indicated on the Drawings.
- B. Install lockers plumb, level, square, rigid, with flush installation.
- C. Use manufacturer's supplied hardware.
- D. Anchoring: Anchor lockers to floors and walls per manufacturer's recommendations.
- E. Joints: Provide flush hairline joints against adjacent surfaces.
- F. Number Plates: Attach number plates to face of doors level with 2 aluminum rivets. Attach in sequence as indicated on the Drawings.
- G. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect.
- H. Remove and replace defective or damaged components that cannot be successfully repaired as determined by Architect.

3.3 ADJUSTING

- A. Adjust doors, locks, and operating hardware to function properly and for smooth operation without binding.

3.4 CLEANING

- A. Clean surfaces promptly after installation in accordance with manufacturer's instructions.
- B. Do not use harsh cleaning materials or methods that could damage finish.

3.5 PROTECTION

- A. Protect installed lockers from damage during construction.

END OF SECTION 10 5113

SECTION 10 7119 - EXTERIOR SUNSHADES

PART 1 -GENERAL

1.1 SUMMARY

- A. Section Includes: This Section includes, but shall not be limited to, all necessary materials, labor, and equipment for the complete installation of aluminum sunshade framing as shown on the Drawings and specified herein.
- B. Related Sections
 - 1. Section 08 4113 – Aluminum-Framed Entrance and Storefront
 - 2. Section 08 8100 – Solar Control Coated Glass
 - 3. Section 06 1000 – Rough Carpentry
 - 4. Section 07 9200 – Joint Sealants
 - 5. Section 07 2726 – Fluid Applied Membrane Air Barriers.
- C. Exterior sunshades and Aluminum-Framed Entrance and Storefront shall be from the same manufacturer.

1.2 SYSTEM DESCRIPTION

- A. General: Provide the manufacturer's aluminum sunshade systems, adapted to the application indicated, and modified as required to comply with performance requirements and materials specified, as demonstrated by testing the manufacturer's corresponding systems according to test methods indicated.
 - 1. Performance Requirements:
 - a. Structural Performance: Structural performance shall be based on a maximum allowable deflection of $L/120$ of the span per IBC 2006. The system shall perform to this criteria when subjected to a combined load of 68 psf.

1.3 SUBMITTALS

- A. General: See Section 01 3300 - Submittal Procedures.
 - 1. Product Data: Submit product data showing material proposed.
 - 2. Shop Drawings: Submit shop drawings for each product and accessory required.
 - 3. Samples: If colors not preselected or scheduled, submit samples for initial color selection. Submit samples for verification purposes.
- B. Quality Control Submittals:
 - 1. Design Data: Submit design calculations for the exterior sunshades and the connections for attaching them to the structure.
 - 2. Test Reports: Submit two copies each, plus the number the Contractor wants returned, of tests.
 - 3. Certificates:
 - a. Submit designer's certification.
 - b. Submit manufacturer's certification that the Installer is approved.

- C. Not used.
- D. Maintenance Manuals: Furnish complete maintenance manuals describing the materials, devices, and procedures to be followed in cleaning and maintaining the work.

1.4 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances, and regulations of Federal, State, and local authorities having jurisdiction. Obtain necessary approvals from such authorities.
- B. Mock-Ups: Prior to installation of the work, fabricate and erect mock-ups for each type of finish and application required to verify selections made under sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution.
- C. Pre-Installation Conference: Conduct pre-installation conference in accordance with Section 01 3100 – Project Management and Coordination.
- D. Coordination: Coordinate installation of exterior sunshades with provision of exterior wall system, window framing system, curtain wall system, etc., to ensure proper structural support is provided, attachment of exterior sunshades is compatible with substrate, and weathertightness of exterior envelope is maintained.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the Project site in supplier's or manufacturer's original wrappings and containers. Store materials in their original, undamaged packages and containers, inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Take field measurements prior to fabrication of the work and preparation of shop drawings, to ensure proper fitting of the work.

PART 2 -PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: Product specified is “Maxblock Sunshade” – style Maxblock® Airfoil design, 30-inch outrigger with 5 blades, as manufactured by Tubelite, Inc. Items specified are to establish a standard of quality for design, function, materials, and appearance. Equivalent products by listed manufacturers are acceptable. The Architect will be the sole judge of the basis of what is equivalent. Aluminum storefront and doors (Section 08 4100 Aluminum Framed Entrances, Storefronts and Aluminum Doors) and the exterior suncontrol (outrigger) devices shall be provided by the same manufacturer.
 - 1. Kawneer
 - 2. Oldcastle

2.2 MATERIALS

A. not used.

B. Materials:

1. Aluminum: Extrusions shall be of aluminum alloy 6063-T5 or 6063-T6 (as required), shall be manufactured within commercial tolerances and free from defects impairing strength and durability. Blade and fascia framing section shall be of 0.090 inch (2.29 mm) minimum wall thickness. Outriggers shall be cut from 0.25 inch (6.35 mm) aluminum plate.
 - a. Recycled Content: For all aluminum extrusions except those required for doors and door frames, provide manufacturer's proprietary product fabricated of aluminum with a recycled content of more than 70 percent ("Ecoluminum," Tubelite, Inc.).
2. Fasteners and Anchors: Screws, bolts, and other accessories shall be compatible with the aluminum under normal service conditions.
3. Bituminous Paint: Provide cold-applied asphalt mastic, containing no asbestos fibers.

2.3 FABRICATION

- A. Carefully fit and match work with continuity of line and design. Rigidly secure members with hairline joints, unless otherwise indicated. Reinforce members and joints with steel plates, bars, rods, or angles for rigidity and strength as needed to fulfill performance requirements.
1. Provide airfoil blades.

2.4 FINISHES

- A. General: Comply with NAAMM MFM for recommendations relative to application and designation of finishes. Finish designations prefixed by "AA" conform to the system established by the Aluminum Association for designating aluminum finishes.
1. All exposed framing surfaces shall be free of scratches and other serious blemishes.
- B. Aluminum Finishes ("Eco-Efficient"):
1. Class II, Clear Anodized Finish: AA-M10-C21-A31 complying with AAMA 611.

PART 3 -EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions: Examine areas and conditions under which the work is to be installed, and notify the Contractor in writing, with a copy to the Owner and the Architect, of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.
1. Beginning of the work shall indicate acceptance of the areas and conditions as satisfactory by the Installer.

3.2 INSTALLATION

- A. Installation shall be in accordance with reviewed product data, final shop drawings, the manufacturer's specifications and recommendations, and as indicated on the Drawings.

1. Separate dissimilar materials with a heavy coating of bituminous paint or other suitable permanent separation as required to prevent galvanic action.
2. Erection tolerances shall comply with manufacturer's published instructions.

3.3 ADJUSTING AND CLEANING

- A. Touch-Up Painting: Immediately after installation, touch-up scratched, nicked, abraded, chipped, or otherwise damaged areas of the finish so as to be unnoticeable.
- B. Cleaning: Wash to remove any deleterious material from finished surfaces immediately.

3.4 PROTECTION

- A. Provide final protection and maintain conditions in a manner acceptable to the Installer, that shall ensure that the exterior sunshades shall be without damage at time of Substantial Completion.

END OF SECTION 10 7119

SECTION 10 7500 - FLAGPOLES

PART 1 -GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes ground-mounted flagpoles made from aluminum.
- B. Owner-Furnished Material: Flag.

1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Flagpole assemblies, including anchorages and supports, shall withstand the effects of gravity loads, and the following loads and stresses within limits and under conditions indicated according to the following design criteria:
 - 1. Base flagpole design on polyester flags of maximum standard size suitable for use with flagpole or flag size indicated, whichever is more stringent.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, operating characteristics, fittings, accessories, and finishes for flagpoles.
- B. Shop Drawings: For flagpoles. Include plans, elevations, details, and attachments to other work. Show general arrangement, jointing, fittings, accessories, grounding, anchoring, and support.
 - 1. Include section, and details of foundation system for ground-mounted flagpoles.
- C. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.
- D. Delegated-Design Submittal: For flagpole assemblies indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- E. Qualification Data: For qualified professional engineer.
- F. Operation and Maintenance Data: For flagpoles to include in operation and maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain flagpole as complete unit, including fittings, accessories, bases, and anchorage devices, from single source from single manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. General: Spiral wrap flagpoles with heavy paper and enclose in a hard fiber tube or other protective container.

PART 2 -PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. American Flagpole; a Kearney-National Inc. company.
 2. Atlantic Fiberglass Products, Inc.
 3. Baartol Company.
 4. Concord Industries, Inc.
 5. Eder Flag Manufacturing Company, Inc.
 6. Ewing Flagpoles.
 7. Lingo Inc.; Acme Flagpole Company Division.
 8. Millerbernd Manufacturing Company.
 9. Morgan-Francis; Division of Original Tractor Cab Co., Inc.
 10. PLP Composite Technologies, Inc.
 11. Pole-Tech Company Inc.
 12. U.S. Flag & Flagpole Supply, LP.
 13. USS Manufacturing Inc.

2.2 FLAGPOLES

- A. Flagpole Construction, General: Construct flagpoles in one piece if possible. If more than one piece is necessary, comply with the following:
1. Fabricate shop and field joints without using fasteners, screw collars, or lead caulking.
 2. Provide flush hairline joints using self-aligning, snug-fitting, internal sleeves.
 3. Provide self-aligning, snug-fitting joints.
- B. Exposed Height: 20 feet (6 m).
- C. Aluminum Flagpoles: Provide cone-tapered flagpoles fabricated from seamless extruded tubing complying with ASTM B 241/B 241M, Alloy 6063, with a minimum wall thickness of 3/16 inch (4.8 mm).
- D. Metal Foundation Tube: Manufacturer's standard corrugated-steel foundation tube, not less than 0.064-inch- (1.6-mm-) nominal wall thickness. Provide with 3/16-inch (4.8-mm) steel bottom plate and support plate; 3/4-inch- (19-mm-) diameter, steel ground spike; and steel centering wedges welded together. Galvanize steel after assembly. Provide loose hardwood wedges at top of foundation tube for plumbing pole.
1. Provide flashing collar of same material and finish as flagpole.
 2. Provide steel ground protectors extending 12 inches (300 mm) aboveground and 6 inches (150 mm) belowground for steel flagpoles where flashing collars are not provided.
- E. Sleeve for Aluminum Flagpole: Fiberglass foundation sleeve, made to fit flagpole, for casting into concrete foundation.
1. Provide flashing collar of same material and finish as flagpole.
- F. Cast-Metal Shoe Base: For anchor-bolt mounting; provide with anchor bolts.
1. Provide ground spike at grade-mounted flagpoles.
 2. Provide connector to building's lightning protection system conductor at roof-mounted flagpoles.

2.3 FITTINGS

- A. Finial Ball: Manufacturer's standard flush-seam ball, sized as indicated or to match flagpole-butt diameter.
 - 1. 0.063-inch (1.6-mm) spun aluminum finished to match flagpole.
- B. Internal Halyard, Cam Cleat System: 5/16-inch- (8-mm-) diameter, braided polypropylene halyard; cam cleat; and concealed revolving truck assembly with plastic-coated counterweight and sling. Provide flush access door secured with cylinder lock. Finish truck assembly to match flagpole.
 - 1. Halyard Flag Snaps: Provide two stainless-steel swivel snap hooks per halyard.
 - a. Provide with neoprene or vinyl covers.

2.4 MISCELLANEOUS MATERIALS

- A. Drainage Material: Crushed stone, or crushed or uncrushed gravel; coarse aggregate.
- B. Sand: ASTM C 33, fine aggregate.
- C. Elastomeric Joint Sealant: Single-component non-sag urethane joint sealant complying with requirements in Division 07 Section "Joint Sealants" for Use NT (non-traffic) and for Use M, G, A, and, as applicable to joint substrates indicated, for Use O.
- D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.5 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.6 ALUMINUM FINISHES

- A. Bronze Finish: AA-M32, fine, directional, medium satin polish; buff complying with AA-M20; seal aluminum surfaces with clear, hard-coat wax.
- B. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm.

PART 3 -EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, including foundation; accurate placement, pattern, orientation of anchor bolts, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare uncoated metal flagpoles that are set in foundation tubes by painting below-grade portions with a heavy coat of bituminous paint.

- B. Foundation Excavation: Excavate to neat clean lines in undisturbed soil. Remove loose soil and foreign matter from excavation and moisten earth before placing concrete. Place and compact drainage material at excavation bottom.
- C. Provide forms where required due to unstable soil conditions and for perimeter of flagpole base at grade. Secure and brace forms to prevent displacement during concreting.
- D. Place concrete, as specified in Division 31 Section "Site Concrete." Compact concrete in place by using vibrators. Moist-cure exposed concrete for not less than seven days or use nonstaining curing compound.
- E. Trowel exposed concrete surfaces to a smooth, dense finish, free of trowel marks, and uniform in texture and appearance. Provide positive slope for water runoff to perimeter of concrete base.

3.3 FLAGPOLE INSTALLATION

- A. General: Install flagpoles where shown and according to manufacturer's written instructions.
- B. Ground Set: Place foundation tube, center, and brace to prevent displacement during concreting. Place concrete. Plumb and level foundation tube and allow concrete to cure. Install flagpole, plumb, in foundation tube.
 - 1. Foundation Tube: Place tube seated on bottom plate between steel centering wedges and install hardwood wedges to secure flagpole in place. Place and compact sand in foundation tube and remove hardwood wedges. Seal top of foundation tube with a 2-inch (50-mm) layer of elastomeric joint sealant and cover with flashing collar.
- C. Baseplate: Cast anchor bolts in concrete foundation. Install baseplate on washers placed over leveling nuts on anchor bolts and adjust until flagpole is plumb. After flagpole is plumb, tighten retaining nuts and fill space under baseplate solidly with nonshrink, nonmetallic grout. Finish exposed grout surfaces smooth and slope 45 degrees away from edges of baseplate.
- D. Mounting Brackets and Bases: Anchor brackets and bases securely through to structural support with fasteners as indicated on Shop Drawings.

END OF SECTION 10 7500

SECTION 11 2000 – APPLIANCES

PART 1 -GENERAL

1.1 SECTION INCLUDES

- A. Appliances of the following types:
 - 1. Cooking appliances.
 - 2. Clothes Washing and Drying appliances

1.2 RELATED SECTIONS

- A. Section 06 4500 - Custom Plastic Laminate Casework
- B. Section 06 6116 - Solid Surfacing
- C. Division 22- Plumbing
- D. Division 26- Electrical

1.3 REFERENCES

- A. ANSI A117.1 - Guidelines for Accessible and Useable Buildings and Facilities.
- B. EPA - Energy Star Appliances.
- C. Public Law 101-336 - Americans with Disabilities Act.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01330.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Model number and selected options for each appliance.
 - 2. Preparation instructions and recommendations.
 - 3. Storage and handling requirements and recommendations.
 - 4. Installation methods.
 - 5. List of maintenance parts.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with referenced standards and the Americans with Disabilities Act as applicable for fixtures for the disabled.
- B. Coordinate rough-in requirements with adjacent construction. Coordinate components and fittings to ensure compatible parts are installed.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.

1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 WARRANTY

- A. Provide manufacturer's standard written warranty for each type of appliance specified.

PART 2 -PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with specification requirements, products from the following manufacturers are acceptable:
- B. Basis of Design Products:
 - 1. GE Appliances, tel. (800) 626-2005, Web: www.geappliances.com
- C. Acceptable Manufacturers:
 - 1. LG Electronics USA, Inc., tel. (888) 865.3026, Web: www.lg.com
 - 2. Whirlpool Appliances, tel. (866) 698-2538, Web: www.whirlpool.com
- D. Prior Approvals: Subject to compliance with requirements, comparable products may be used based upon the Architect's review of submittals per Section 01 6300 "Product Substitution Procedures".

2.2 APPLIANCES, CONTROLS, VENTS

- A. Appliances:
 - 1. Electric Range: GE model no. JAS02SNSS.
 - 2. Refrigerators:
 - a. GE model no.: GFE26GGKBB.
 - b. GE model no.: GME04GGKBB. Location: Nurse's Office.
 - 3. Washer: GE model no.: GFWN1600JWW.
 - 4. Dryer: GE model no.: GFDN160EJWW.
 - 5. Under-cabinet hood 100/ 270 CFM: GE model no.: JVX5305SJSS.
 - 6. Laundry pedestal with storage drawer: GE, model no.: GFXP1308FWW. Location: Custodial/ Laundry 405B5 (quantity two), and Laundry 307A (quantity two).

PART 3 -EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared. Coordinate rough-in with appliance sizes and utility requirements.

- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Assemble appliances and trim and install in accordance with manufacturer's instructions and the following:
 - 1. Securely mount to substrate.
 - 2. Install appliances plumb and level and in proper relationship to adjacent construction.
 - 3. Connect appliances to building utility, supply and waste systems as applicable.
 - 4. Test for proper operation and drainage. Adjust until proper operation is achieved.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 11 2000

SECTION 11 4000

FOOD SERVICE EQUIPMENT

PART 1 -- GENERAL

1.1 RELATED DOCUMENTS

- A. General provisions of the Contract, including General and Supplementary Conditions and other Specifications Sections, apply to the work of this Section.
- B. Architectural drawings show the lay-out, special construction details and utility requirements for the Food Service Equipment specified herein.

1.2 DESCRIPTION OF WORK:

A. Work Included:

The extent of food service equipment as specifically listed or described hereunder including but Not necessarily limited to delivery to the jobsite, unloading, uncrating, setting in place, levelling, caulking to walls, all stands and supports for all equipment requiring them, cutting holes in equipment for pipes, collars, ferrules, or escutcheons, all interwiring of equipment from control switches, panels, cut-offs, etc., where these items are part of equipment furnished, and all other related materials or accessories not shown or specified but necessary and reasonably implied from drawings or accepted methods of construction.

B. Work Not Included:

1. Ventilation: Refer to other divisions for required exhaust fans, exhaust ducts, fan curbs, make-up air units, make-up air ducts and other materials required for final connections except where specifically required in Part 3 -- Itemized Equipment Specifications.
2. Plumbing: Refer to other divisions for required valves, stops, traps, grease traps, cut-offs, piping, extended condensate lines to floor sinks from evaporator coils, interconnecting piping between steam kettles and boilers and other materials required for final connections except where specifically required in Part 3 -- Itemized Equipment Specifications.
3. Electrical: Refer to other divisions for required switches, safety cut-offs, control panels, fuse boxes, wiring, convenience outlets and other materials required for final connections except where specifically required in Part 3 -- Itemized Equipment Specifications.

1.3 QUALITY ASSURANCE:

- A. Codes and Standards: The work of this Section shall comply with the following codes and standards, including all current revisions and supplements.
 1. NSF - National Sanitation Foundation Standard 2 - Food Service Equipment.
 2. NSF - National Sanitation Foundation Standard 4 - Commercial Cooking and Warming Equipment.
 3. NSF - National Sanitation Foundation Criteria C-2 - Special Equipment and Devices.
 4. NSF - National Sanitation Foundation Standard 7 - Refrigeration Equipment and Devices.
 5. FDA - Food and Drug Administration Food Code 97 - Chapter 4.
 6. Underwriters Laboratories, Inc. - UL 107 Safety Standards for Commercial Electrical Cooking Appliances.
 7. NFPA 96 - Standard for the Installation of Equipment for the Removal of Smoke and Grease Laden Vapors from Commercial Cooking Equipment.

8. NFPA 70 - National Electrical Code Chapter 1; Article 110 - Requirements for Electrical Installations, and Article 422 - Appliances.
9. NFPA 89M - Manual on Clearances for Heat Producing Appliances.
10. International Conference of Building Officials, Uniform Building Code, Section 1714 - Clearances for Electric Ranges and Hot Plates.

- B. Bidder's Qualifications: Firms regularly engaged in the sale and installation of commercial food service equipment of similar type and size, and whose projects have been in satisfactory service for not less than five years.
- C. Manufacturer's Qualifications: Firms regularly engaged in the manufacture of commercial food service equipment of similar types, capacities, and sizes required and whose products have been in satisfactory service for not less than 5 years.
- D. Fabricator's Qualifications: Where indicated units require custom fabrication, provide units fabricated by a shop which is skilled and with a minimum of 5 years experience in similar work. Fabricate all custom equipment items at the same shop. Where units cannot be fully shop fabricated, complete fabrication work at the project site.

1.4 SUBMITTALS:

A. Construction Drawings:

1. Floor Plan: Contractor shall prepare and submit a drawing in a scale of not less than 1/4" = 1'-0" showing each piece of Food Service Equipment in its proper location and its relationship to other pieces of equipment, building walls, building columns, etc. Included on this sheet or on accompanying sheets shall be a schedule showing item numbers, quantities required, descriptions, manufacturers and model number of each piece of Food Service Equipment.
2. Floor Depression & Ventilation Drawing: Contractor shall prepare and submit a drawing in a scale of not less than 1/4" = 1'-0" showing floor depressions and ventilation rough-ins required for each piece of Food Service Equipment. Each rough-in shall show dimensions from walls or columns, elevations above or below finished floor, and all other requirements needed for the proper operation of this equipment.
3. Plumbing Rough-In Drawing: Contractor shall prepare and submit a drawing in a scale of not less than 1/4" = 1'-0" showing plumbing rough-ins required for each piece of Food Service Equipment. Each rough-in shall show dimensions from walls or columns, elevations above finished floor, pipe sizes, Btu loads and all other requirements needed for the proper operation of this equipment.
4. Electrical Rough-In Drawing: Contractor shall prepare and submit a drawing in a scale of not less than 1/4" = 1'-0" showing electrical rough-in required for each piece of Food Service Equipment. Each rough-in shall show dimensions from walls or columns, elevations above finished floor, voltage, phase, horsepower, K.W. loads and all other requirements needed for the proper operation of this equipment.

B. Shop Drawings:

1. Custom Fabricated Steel: Contractor shall prepare and submit drawings in a scale of not less than 3/4" = 1'-0" for plan views and elevations, 1-1/2" = 1'-0" for sections and 3" = 1'-0" for details showing each piece of custom fabricated metal equipment. These drawings shall indicate construction details, materials, gauges of materials, finishes, utility requirements and other information needed for the proper construction of this equipment.
2. Custom Fabricated Wood: Contractor shall prepare and submit drawings in a scale of not less than 3/4" = 1'-0" for plan views and elevations, 1-1/2" = 1'-0" for sections and 3" = 1'-

0" for details showing each piece of custom fabricated wood equipment. These drawings shall indicate construction details, materials, sizes of materials, finishes, utility requirements and other information needed for the proper construction of this equipment.

- C. **Manufacturer's Literature:** Contractor shall prepare and submit hardbound copies of manufacturer's literature indicating components of specified materials, installation requirements, specifications and maintenance requirements for this equipment.
 - D. **Owner Furnished Equipment:** Contractor shall show all Owner furnished equipment on his drawings and indicate with asterisks (*) that these rough-in utilities shall be verified by the Contractor.
 - E. **Operating and Maintenance Manuals:** Upon completion of this portion of the work, and as a condition of its acceptance, Contractor shall submit operating and maintenance manuals of all this equipment.
 - F. **Repair Kits & Keys:** Furnish to the Owner any replacement parts, O-rings, lubrication, etc. as may be standard with the equipment furnished. Also furnish to the Owner, any keys, properly tagged with reference to the equipment they operate.
- 1.5 **DELIVERY, STORAGE AND HANDLING:**
- A. Deliver materials to the jobsite in a timely manner to ensure uninterrupted progress. Major manufactured components shall have a protective wrapping such as polyethylene or heavy kraft paper to protect factory finishes. All other components shall be packaged and identified for ease in assembly. Promptly remove damaged materials from the jobsite and immediately make all replacements necessary to the satisfaction and approval of the Owner and repair or replace at Contractor's expense.
- 1.6 **START-UP AND DEMONSTRATION:**
- A. Delay the start-up of the Food Service Equipment specified herein until such time as all electrical, plumbing and ventilating utilities have been completed and checked for proper operation.
 - B. Coordinate start-up with the General Contractor, Architect, Owner, Kitchen Cleaning and Maintenance personnel. Arrange with local factory representatives to be present to start and demonstrate the proper operation, cleaning procedure and maintenance of each piece of this equipment. Repair or replace any piece of equipment which is not operating properly.
- 1.7 **WARRANTY AND SERVICE:**
- A. **Warranties:** Food Service Equipment Contractor shall guarantee all new fixtures against defects in workmanship and materials for a period on one (1) year from the date of start-up. Guarantee shall include replacement parts, labor to replace parts, travel time, mileage and all expenses except freight on replacement parts. Refrigerated units shall include all of the above plus an additional four (4) year guarantee covering the motor compressor.
 - B. **Service:** Food Service Equipment Contractor shall make suitable arrangements with local approved service and repair agencies for the servicing and maintenance of the equipment should malfunctions occur within the one (1) year guarantee period. Upon completion, the Contractor shall furnish the Owner with a list of local agencies to be called in the event malfunctions occur.

PART 2 -- PRODUCTS:

2.1 MATERIALS:

- A. Stainless steel: U.S. Standard gauge; 18-8; Type 302 or 304; No. 4 satin finish.
- B. Galvanized steel: Shall be electr-galvanized or hot dipped. Framework of galvanized steel shall be welded construction. All welds shall be ground smooth, and where galvanizing has been burned off, the weld shall be touched up with a high grade paint.
- C. Sealant: Single component, mildew resistive, silicone rubber, maximum joint movement of plus or minus 25%, SCS1702, F.S. TT-S-001543A, as manufactured by General Electric Company, Dow-Corning, Pioneer Aviation or acceptable substitution.
- D. Insulation:
 - 1. For low temperature applications, such as ice bins or cold pans, use urethane, rigid board, foam or foamed in place, of not less than 2" thick, except that verticle surfaces may be 1" thick. Insulation shall be bonded at joints to prevent condensation on the exterior.
 - 2. For normal temperature applications, such as fabricated under-counter refrigerators, use Styrofoam beadboard material 2" thick, bonded at all joints.
 - 3. For high temperature applications, such as plate warmers, use block-type wool, minimum of 1" thick.
 - 4. At counter tops subject to heat from cooking equipment and/or refrigeration compressors, use 1" thick Johns-Manville Marinite 36, Dow-Corning R-19 or Pioneer Aviation IN-19, to insulate the underside of the top.
 - 5. Between freezer and/or refrigerator compartments and counter tops, use insulation as described in D-4 above.
- E. Table Tops:
 - 1. All metal tops shall be one piece 14 gauge stainless steel, welded construction, reinforced on the underside with closed galvanized steel hat sections, welded or screwed in place so that tops can support heavy weights without deflections. Cross braces shall be not more than 30" on center.
 - 2. Underside of all tops shall be sound deadened Butyl applied between the top and framing, and spray or brush underside of tops with minimum of 1/16" thick hard drying, sound deadening material.
 - 3. Wood table tops shall be limited as required by local health requirements for extensive salad making or baking and shall be 2" or 3" thick sectional kiln dried white maple, held together with iron rods. Bolts and heads shall be countersunk and concealed with maple plugs. Top edges shall be sanded smooth and treated with oil or paraffin with underside coated with waterproof paint. Risers, if required, shall be 6" tall X 1" thick and of coved one piece integral construction.
- F. Enclosed Cabinet Bases:

1. Enclosed bases or cabinet bodies shall be of 18 gauge metal as specified in Part 3 -- Itemized Equipment Specifications. Body shall be enclosed at rear and both ends, body corners square. Ends shall terminate at operators side in 2" wide verticle mullions. Mullion openings shall be in accordance with N.S.F. requirements. Body bracing at top shall be 1-1/2" X 1-1/2" X 1/8" galvanized angles, spaced approx. 24" O.C. Body shall be mounted on 6" high stainless steel legs with bullet feet, welded to 12 gauge gussets, which are in turn welded to the body.
2. Where fixtures are fitted against or between walls, set bodies in 1" from wall line, however, tops shall extend back to wall line, permitting adjustment to wall irregularities.
3. Provide verticle trim strips of same material as body at ends or rear of fixture to close the gap between body and wall.
4. Sides and through partitions shall be flush with bottom rail, welded at intersections.

G. Elevated Cabinets:

1. Top shall be constructed of 20 gauge material as indicated in Part 3 -- Itemized Equipment Specifications, 15" front front to back with all edges turned down 1-1/2" on all sides. Top shall slope down 4" from rear to front. Bodies shall be 20 gauge material, enclosed on back and ends, with bottom and intermediate shelves. Ends shall terminate at front in a 2" wide mullion. Mullion openings shall be in accordance with N.S.F. Front openings to bottom and inter-mediate stationary shelf shall be welded to body.
2. Back shall be fitted with channels for supporting cabinet to wall.

H. Legs and Crossrails:

1. All equipment legs shall be 1-5/8" O.D., 16 gauge seamless tubing of material as specified in Part 3 -- Itemized Equipment Specifications. All welds at crossrails shall be welded, ground smooth, finished and polished if stainless steel, painted if galvanized steel. Bottom of legs at floor shall be fitted with sanitary bullet feet with not less than 3/4" adjustment. Legs shall be fastened to equipment as follows:
 - a. To sinks by means of enclosed gussets welded in place. Gussets shall be completely enclosed sanitary type, stainless steel, reinforced with bushings and have set screw for securing legs.
 - b. To metal table tops and dishtables with enclosed gussets (same as above) which shall be welded to closed formed galvanized steel hat sections of 14 gauge or heavier material. Bracing shall be welded to underside of tops. Hat sections shall be completely enclosed on ends.
 - c. Enclosed gussets shall be minimum of 3" diameter at top, continuously welded to frame members or sink bottoms.
 - d. To wood table tops by means of welded pipe flanges with set screws and flanges screwed to underside of tops.

2. Components:

- a. Stainless Steel Gussets: Stainless steel exterior of the proper size to fit 1-5/8" O.D. tubing with allen screws for fastening and adjustment. Minimum of 3" diameter at top X 3-3/4" long. Outer shell shall be 16 gauge stainless steel reinforced with 12 gauge mild steel insert welded interior shell.
- b. Stainless Steel Counter Legs: Stainless steel exterior; 5-3/4" minimum, 7" maximum length welded to 3-1/2" X 3-1/2" X 12 gauge plate with four countersunk holes and bolted to base.
- c. Stainless Steel Adjustable Feet: Stainless steel 1-1/2" diameter fitted with threaded cold rolled rod for minimum 1-1/2" diameter X 3/4" threaded bushing, plug welded to legs.

I. Shelves:

1. Undershelves: On open base tables, construct of 16 gauge metal as indicated in Part 3 -- Itemized Equipment Specifications.
2. Interior Shelves: Construct interior shelves in cabinet bodies and enclosed bases of 16 gauge material as indicated in Part 3 -- Itemized Equipment Specifications. Bottom shelves shall be stationary. Intermediate shelves shall be stationary and spaced so as to allow equal height openings above and below the intermediate shelf. Hold shelves 4" short of rear of cabinets and turn up 2" to provide a chase for electrical and plumbing lines.

J. Sinks and Drainboards:

1. Unless otherwise indicated in Part 3 -- Itemized Equipment Specifications, all sinks and drainboards shall be constructed of 14 gauge stainless steel, #4 finish. Sound deaden underside of drainboards as previously specified. Each sink compartment shall have back, bottom and front formed of one sheet with verticle corners fully welded.
2. All horizontal and verticle inside corners of sinks shall be coved with a minimum of 5/8" radius. Compartments of two and three compartment sinks shall be welded side by side forming double wall partitions. Tops of part- itions shall be fully welded. Front face of multiple compartments shall be veneered with 20 gauge stainless steel skirting.
3. Bottoms of each compartment shall have four cross breaks pitched to drain depression. Furnish and install chrome plated waste outlet with 3-1/2" basket in all sinks unless otherwise indicated in Part 3 -- Itemized Equipment Specifications.
4. Backs and ends which fit against walls shall be equipped with 8" high integral back splash, turned back 2" at a 45 degree angle, then turned down 5/8" flat against the wall. Secure to building walls with 12" long "Z" clips and seal with silicone sealant. Ends of back splashes shall be closed.
5. Front and ends which do not fit against walls shall be equipped with a 3" tall; 1-1/2" thick; 180 degree roll with rounded corners. Front and end rolls shall terminate against back splashes and be fully welded.
6. Faucet holes shall be provided in back splash; 4" down from top. Faucet holes shall be centered in single compartment sinks and centered over sink partitions in multiple compartment sinks.

7. Sinks shall be 14" deep from drainboard height to bottom of sink unless otherwise indicated in Part 3 -- Itemized Equipment Specifications. Sinks shall be 37" high from top of rolled rim to floor and 42" from top of backsplash to floor.
8. Lever drains, where specified shall be 2" chrome plated brass with twist operating handle.
9. Overflow, where called for shall be 1-1/4" O.D. chrome plated brass, head connected to drain.
10. Faucets shall be furnished by this Contractor unless otherwise indicated in Part 3 -- Itemized Equipment Specifications. All faucets shall be by the same manufacturer to ease Owner's replacement, service and stocking or replacement parts. All faucets shall be constructed of heavy gauge brass or bronze and finished with heavy duty, long lasting, deep lustre, polished nickel and chrome plating. Faucet bodies shall be splined to prevent the replacement from turning in the body. Replacement units shall be brass with removable monel seats and constructed to withstand full line pressure and include composition seal between replacement unit and body, monel self locking screw, heavy duty washer, heavy duty double Acme thread and separate packing gland with Teflon impregnated packing.
 - a. Wall mounted faucets shall be mounted on 8" centers, have 12" long swing spouts, lever handles and 1/2" I.P.S. eccentric flanged female inlets.
 - b. Deck mounted faucets shall be mounted on 4" centers, have 12" long swing spouts, lever handles and 1/2" I.P.S. eccentric flanged female inlets.
11. Sink Drainboards shall be constructed of same material as sinks and be integrated with same. Drainboards shall have a 3" high, 1-1/2" thick, 180 degree roll to match sink edges. Horizontal and vertical corners shall be covered with a 5/8" radius, welded, ground smooth and polished to #4 finish, 180 grit. Solder filleting of corners is not acceptable. Drainboards shall be pitched slightly to properly drain into sinks.

K. Dishtable Tops:

1. Tops of dishtables shall be constructed of 14 gauge stainless steel with edges which do not fit against walls equipped with a 3" tall; 1-1/2" thick; 180 degree roll with rounded corners. Front and end rolls shall terminate against back splashes and be fully welded. Edges which fit against walls shall be equipped with 8" high integral back splash, turned back 2" at a 45 degree angle, then turned down 5/8" flat against the wall. Secure to building walls with 12" long "Z" clips and seal with silicone sealant. Ends of back splashes shall be closed. Horizontal and vertical corners shall be covered with a 5/8" radius, welded, ground smooth and polished to #4 finish, 180 grit. Reinforce tops with galvanized hat channels at approx. 24" O.C. stud bolted to underside of top with cadmium plated lock nuts. Sound deaden bracing and underside of top.
2. Top of dishtables shall be mounted on tubing legs and connecting rails same as specified for open base tables.

L. Doors:

1. Metal doors shall be double cased material as specified in Part 3 - Itemized Equipment Specifications. Outer pans shall be 18 gauge with corners welded, ground smooth and

polished. Inner pans shall be 20 gauge and fitted tightly into the outer pans with a sound deadening material such as Celotex or Styrofoam used as a core. The two pans shall be tack welded together and joints solder or silicone filled. Doors shall be approx. 3/4" thick, and fitted with a recessed, flush mounted stainless steel pull.

2. Sliding doors shall be mounted on large, quiet ball bearing rollers in a 12 gauge stainless steel or aluminum overhead tracks and removable without the use of tools. Bottom of cabinet shall have stainless steel guide pins, not guide tracks.

M. Hardware:

1. Heavy duty type, chrome plated or stainless steel.
2. Door handles shall be locking type, keyed, and master keyed.
3. Hardware shall be identified with manufacturer's name and number.
4. Submit samples for approval, when required by the Owner.
5. Pulls by Klein, Keil or Knap-Vought as follows:
 - a. Door Pulls: Klein Model No. 12000-SL.
 - b. Drawer Pulls: Klein Model No. 12000-DR.

N. Drawer Assemblies:

1. Assemblies shall consist of removable drawer body mounted in a ball bearing slide assembly.
2. Slide assemblies shall consist of one pair of roller bearing extension slides with side and back enclosure panels, front spacer angle, two drawer carrier angles, secured to sides and stainless steel fronts.
3. 250 Lb. capacity slides as manufactured by Grant Pulley and Hardware Co., Klein, Keil or Knap-Vought or approved substitution.
4. Drawer bodies for general storage shall be 20" X 20" X 5" deep with stainless steel pans as manufactured by Klein, Keil, Knap-Vought or approved substitution.
5. Drawers intended for food product use shall be removable type with 15" X 20" X 5" deep stainless steel pans as manufactured by Klein, Keil, Knap-Vought or approved substitution.
6. Drawer fronts shall be double cased material as specified in Part 3 - Itemized Equipment Specifications. Outer pans shall be 18 gauge with corners welded, ground smooth and polished. Inner pans shall be 20 gauge and fitted tightly into the outer pans with a sound deadening material such as Celotex or Styrofoam used as a core. The two pans shall be tack welded together and joints solder or silicone filled. Fronts shall be approx. 3/4" thick, and fitted with a recessed, flush mounted stainless steel pull.
7. All drawers shall be provided with replaceable soft neoprene rubber bumpers or, for refrigerated drawers, full perimeter soft gaskets.

O. Pipe Chases:

1. Where top arrangements of enclosed base tables make it necessary for plumbing and supply piping to be passed through base, this piping shall be enclosed in a suitable pipe chase with easily removable access panels. Access panels shall be formed in a pan shape, removable without tools.

P. Sink Inserts:

1. Sink inserts shall have back, bottom and front formed of one sheet of metal with ends welded in place. All horizontal and vertical corners shall be covered with a 5/8" radius. Alternately, die-stamp one sheet of metal to produce back, bottom, front and sides with all horizontal and vertical corners shall be covered with a 5/8" radius.
2. Sinks shall be fitted with 1-1/2" stainless steel basket strainer drains with removable crumb cup and chrome plated tail piece.

Q. Hot Food Wells - Electric:

1. Counter top shall have 12" X 20" die stamped pan openings with perimeter raised beaded edge, approx. 1/4" high. Stainless steel angle frame shall be welded to underside of top, around perimeter of opening and between openings for extra support. Each opening shall be fitted with a die stamped stainless steel covered corner well, 6-1/2" deep. Wells shall be undermounted and housed in a galvanized, insulated casing.
2. Wells shall be heated by individually controlled electric elements, each having a pilot light indicator. All elements shall be interconnected and wired to a master switch with all wiring terminating in a lower junction box. Controls and wiring shall be housed in a galvanized metal chase which shall be removable without tools. Elements shall be rated at 1000 watts based on 120, 208 or 240 volts, single phase.

R. Cold Pans - Ice:

1. Counter top shall have 12" wide die stamped pan opening with perimeter raised beaded edges, approx. 1/4" high. Interior lining shall be 18 gauge stainless steel, insulated with 1" Styrofoam in walls and bottom, with 20 gauge galvanized metal outside liner. Pans shall be fitted with perforated, sectional 18 gauge stainless steel false bottoms, 1" high with notched open corners. Bottom of pan shall be cross cracked to and fitted with a 1" I.P.S. chrome plated brass drain.

2.2 WELDING AND SOLDERING:

- A. Materials of 18 gauge or heavier shall be welded. Seams and joints shall be shop welded or soldered as the nature of the material may require. Welds shall be ground smooth and polished to match the original finish. Where galvanized has been burned off, the weld shall be cleaned, ground smooth and painted with a high grade paint.

PART 3 -- ITEMIZED EQUIPMENT SPECIFICATIONS:

A. Equipment Specifications:

ITEM NUMBER 1 - S/S FLAT-TOP COUNTER CABINET BASE WITH MID-SHELF AND HINGED DOORS

Quantity:	One (1) Each
Manufacturer:	Advance

Model Number: EHB-SS-243M
Utilities Required:
Options: Per Manufacturers standard specifications and the
Following:
Furnish Top Size of 36" X 24"

ITEM NUMBER 2 – MILK COOLERS

Quantity: Two (2) Each
Manufacturer: Beverage-Air
Model Number: SMF-49HC-1-S
Utilities Required: 120 Volt – 1 Phase – ½ H.P.
Options: Per Manufacturers standard specification.

ITEM NUMBER 3 – HOT FOOD TABLE

Quantity: One (1) Each
Manufacturer: Vollrath
Model Number: 38118
Utilities Required: 208 Volt – 1 Phase – 3.2 K.W.
¾" Indirect Waste
Options: Per Manufacturers standard specifications and the
Following:
Furnish with 38054 Overshelf With Acrylic Sneeze Guard

ITEM NUMBER 4 – S/S WORKTABLE

Quantity: One (1) Each
Manufacturer: Advance
Model Number: SS367 – 84" X 36"
Utilities Required:
Options: Per Manufacturers standard specifications and the
Following:
Furnish with Four (4) Deluxe Drawers

ITEM NUMBER 5 – SALAD BAR

Quantity: One (1) Each
Manufacturer: Cambro
Model Number: VBRLHD6
Utilities Required:
Options: Per Manufacturers standard specifications.

ITEM NUMBER 6 – SPARE NUMBER

ITEM NUMBER 7 – REACH-IN REFRIGERATORS

Quantity: Two (2) Each
Manufacturer: Beverage-Air
Model Number: RB23HC-1S
Utilities Required: 120 Volt – 1 Phase – ½ H.P.
Options: Per Manufacturers standard specifications and the
Following:
Furnish with three (3) extra shelves per unit

ITEM NUMBER 8 – S/S WORKTABLE

Quantity: One (1) Each
Manufacturer: Advance
Model Number: SS3610 – 120” X 36”
Utilities Required:
Options: Per Manufacturers standard specifications and the Following:
Furnish with Four (4) Deluxe Drawers

ITEM NUMBER 9 – HEATED CABINETS

Quantity: Two (2) Each
Manufacturer: FWE
Model Number: HLC-2127-9-9
Utilities Required: 208 Volt – 1 Phase -- 2.38 K.W. EACH
Options: Per Manufacturers standard specifications.

ITEM NUMBER 10 – S/S HAND SINK

Quantity: One (1) Each
Manufacturer: Advance
Model Number: 7-PS-68
Utilities Required: ½” Hot & Cold Water
1 ½” Direct Waste
Options: Per Manufacturers standard specifications.

ITEM NUMBER 11 – FLY FAN

Quantity: One (1) Each
Manufacturer: Mars
Model Number: PH1064-2E
Utilities Required: 208 Volt – 3 Phase – (2) ½ H.P. + 12 K.W.
Options: Per Manufacturers standard specifications and the Following:
Furnish With Door Switch
Coordinate Mounting Brackets with Overhead Door

ITEM NUMBER 12 – SPARE NUMBER

ITEM NUMBER 13 – S/S STORAGE SHELVING

Quantity: One (1) Each
Manufacturer: Inter-metro
Model Number: Super-Erecta Zinc Plated – 72” x 30” x 72” H
Utilities Required:
Options: Per Manufacturers standard specifications and the following:
furnish 5-tiered shelves; furnish 86P zinc-plated posts and “S” hook where possible.

ITEM NUMBER 14 – S/S WORKTABLE W/ SINKS

Quantity: One (1) Each
Manufacturer: Advance
Model Number: SS306 – 72” X 30”

Utilities Required: ½” Hot & Cold Water
1 ½” Indirect Waste
Options: Per Manufacturers standard specifications and the
Following:
Furnish With (2) TA-11 Sinks With Faucet and Basket Drains

ITEM NUMBER 15 – S/S 3-COMPARTMENT SINK

Quantity: One (1) Each
Manufacturer: Advance
Model Number: 94-43-72-24RL
Utilities Required: ½” Hot & Cold Water
1 ½” Indirect Waste
Options: Per Manufacturers standard specifications and the
Following:
Furnish With (2) 12” Swing-Spout Faucets
Furnish With (3) Lever Operated Drains

END OF SECTION

SECTION 116600 - ATHLETIC EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Basketball backstops and accessories.
2. Divider Curtains.
3. Wall Pads.
4. Volleyball Equipment.

B. Related sections:

1. Section 05 1200 Structural steel framing to support basketball backstops.

1.2 SUBMITTALS

A. Submit in accordance with Section 01330 - Submittal Procedures.

1. List of proposed products and product data.
2. Shop drawings showing layout, elevations, dimensions, fabrication details, method of attachment, loads to be transmitted to building structural members, requirements for supplementary bracing or structural support members and electrical wiring diagrams.
3. Manufacturer must provide calculations and reports for tests performed by an independent testing laboratory accredited by the American Association of Laboratory Accreditation (A2LA) that clearly demonstrate compliance with minimum safety factors included in product specifications.
4. Samples of fabric for selection by Architect.
5. Manufacturer's installation and maintenance instructions.

1.3 QUALITY ASSURANCE

- A. Source limitation: All components including suspension system, frame assembly, backboards, goals, electric winches, and controls for backstops shall be of a single manufacturer.
- B. All welding to be performed by personnel having passed Welder Qualification testing in accordance with American Welding Society (AWS) code D1.1 or higher. Manufacturer to provide certification and test results upon request.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Provide volleyball floor sleeves, covers and floor inserts in accordance with requirements of related trades that are responsible for installation. Do not deliver balance of athletic equipment until building is enclosed and other construction within gymnasium is substantially complete.

1.5 WARRANTY

SECTION 116600 - ATHLETIC EQUIPMENT

- A. All Basketball Backstop support structures including clamps, fittings and tube to have a minimum warranty of 25 years from date of substantial installation. Warranty for other items to be as indicated in product specifications.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Basis of Design: Draper, Inc., 411 South Pearl Street, Spiceland, Indiana 47385-0425; 765-987-7999.
- B. Manufacturers of equivalent products submitted and approved in accordance with Section 01630 - Product Substitution Procedures.

2.2 BASKETBALL BACKSTOPS

A. Main Court (2 Required)

1. Type:

Basketball backstop shall be the DRAPER EZ FOLD Model TF-20-B, ceiling-suspended, forward folding by Draper, Inc. of Spiceland, IN.

Backstop shall be a bolt-together main frame constructed from steel mechanical tubing to form a rigid tetrahedral "T" design of back-to-back right triangles. The main stem shall be 6" OD 11-ga. steel tubing, the top of the "T" shall be 4" OD 11-ga. steel tubing and the side braces shall be 2-1/4" OD 14-ga. steel tubing. Side braces shall join stem no higher than 4'6" above goal (18" above top of backboard). Main backstop frame shall include 4, 1-1/2" OD 11-ga. steel tubing members (webbing) "X" bracing side braces to main stem. The main stem shall be long enough to allow ± 6 " height adjustment of either fan or rectangular banks. The folding front brace shall be jackknife type, fully adjustable, self-locking in the down position and constructed of 2-1/2" OD 13-ga. (outer) steel tubing and 2-1/4" OD 14-ga. (inner) steel tubing.

Pivot or hinge joint for folding of backstop shall not exceed 15" from roof structure except when required by architectural conditions for coordination with other trades or equipment. Pivot or hinge point to be designed in a manner to provide a minimum structural capacity of approximately 20,000 Lbs. and a safety factor of 50:1. The main backstop frame shall pivot on 1-1/4" minimum solid steel shaft secured in a milled bearing hole in 1/2" minimum steel plate hangers to ensure accurate positioning of bank.

Bank attached to the 6" OD main stem by heavy-duty bank hangers. Hangers constructed of 1" x 2" 11-ga. steel tubing and formed 1/4" steel plate with slotted holes for lateral adjustment. All banks shall have one upper bank hanger and include a goal brace, which attaches directly to the goal mounting plate and directly to the 6" main stem of the backstop to eliminate any strain on the bank and help prevent glass breakage. Backstop to have powder coat finish.

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Backstop is raised or lowered by a ¼" (6.35 mm) aircraft cable, certified minimum break strength of 7,000 pounds (3178 kg), operating on cast iron sheaves with bronze oilite bearings that do not require lubrication.

Backstop shall be supported from 4" OD 11-ga. steel mechanical tubing anchored to roof structure by means of heavy steel support hangers. Attachment to building structure to be with clamps capable of supporting a minimum of 20,000 Lbs. each. Superstructure shall be designed with a minimum of four attachment clamps to produce a combined minimum attachment point safety factor of 75 to 1 and manufacture must be able to present independent testing data to substantiate safety factor. Superstructure tubes shall be reinforced with bridging and/or bracing when truss centers exceed 12'0".

Backstop shall be provided with choice of black or white powder coat finish.

2. Operation:

Winch is to be DRAPER model no. 503285 electric winch by Draper, Inc., Spiceland, IN

Winch has a powerful ¾ HP, 115-volt, single phase, instant reverse motor with thermal overload protection that is governed to stall at 14 amps. Motor is rated at an intermittent 10-minute duty cycle. Winch motor operates at full load amperage rating of 11.5 full load amps. Winch has integral limit switches to stop travel in up and down positions.

Winch has an oil-bath gear case with precision ball bearings and premium seals for a lifetime of maintenance-free, leak free operation. Gear case features hardened steel gears that are securely captured to take on radial and thrust loads. Double worm gear reduction is in a ratio of 200:1 to provide exceptional holding power under load and eliminates the need for special or supplemental braking systems. Winch is specified to continuously run at the maximum rated load of 1250 lbs. (566 kilograms) for the motors rated duty cycle of 10 minutes without sustaining any gear damage.

Winch has a large 4 ½" (114 mm) diameter cable drum that is helically grooved to accept ¼" – 7 x 19 galvanized aircraft cable. Drum will accept up to 35' (10.7 meters) on a single layer and has a torsion spring tensioning roller to ensure cable tracks properly into grooves, even if cable is allowed to go slack. Large diameter, grooves and tensioning spring provide long cable life and performance.

Winch can be mounted in any orientation that allows for correct wrap direction and unobstructed cable travel which provides extreme flexibility during installation.

Winch Assembly is covered by a five-year limited warranty and weighs just 68 Lbs. (30.8 kilograms)

Motor shall be controlled by an individual flush mounted, three-position, momentary contact tumbler-style key switch.

3. Bank:

Backboard to be DRAPER Model 503136 rectangular glass backboard by Draper, Inc. of Spiceland, IN.

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Backboard to be 72" x 42" (183 cm x 107 cm) to meet all NCAA, NFHS and professional requirements. Backboard frame of a heavy, brushed aluminum extrusion for maximum durability. Extended frame section of high tensile aluminum (6063-T5). Ends of the frame extrusions mitered and fitted with steel brackets on all four corners, with the upper brackets incorporating keyhole slots for mounting the backboard to the support structure at standard mounting centers.

Goal mounting structure of a heavy, formed steel assembly, secured to the lower horizontal frame member to minimize stress on the glass section. Special steel sleeves at the goal mounting hole locations to secure rear structure to front mounting plate, forming a unitized assembly to minimize shock to the glass. Entire frame including goal-mounting structure fitted with a shock absorbing neoprene material to cushion and protect the glass section.

1/2" (12 mm) thick, fully tempered glass section with uniform load and impact strength. Glass is tempered to meet ANSI Standard Z91.1 Class A and CPSC Standard 16 CFR1201 Category II. Glass is tested to conform with requirement of FIBA Rule 2.8 – Rigidity Test for Backboard Tempered Safety Glass. Official white border and target area is permanently fired into front side of glass section so that it cannot wear away.

Goal mount structure provided with two holes (7/16") and two studs (3/8"-16) to secure backboard and goal to a direct mount "goal brace" feature which relieves all stress and shock on the backboard conforming to NCAA (Rule 1.15.1) and NFHS (Rule 1.11.1). Goal mounting holes (4) to be standard 5" (127mm) horizontal x 4" (102 mm) vertical mounting centers.

Backboard covered by a Lifetime Limited Warranty when installed on a Draper EZ Fold basketball backstop with Goal Brace or Direct Mount Height Adjuster.

4. Backboard Safety Padding:

Backboard Edge Padding to be DRAPER Model 5032XX bolt-on backboard safety padding by Draper, Inc., Spiceland, IN.

Molding process produces a tough "skin" on the outside of the foam padding for long life. Pre-molded corners for improved player safety. Foam has about a 15 lbs. density and durometer of approximately 35 on the Shore A scale. Molded-in steel track and bolt-on attachment system eliminate frustrating re-gluing or taping. Meets or exceeds all NCAA, NFHS and FIBA requirements. Available in Grey, Dark/Royal Blue, Red/Scarlet, Navy Blue, Marine/Columbia Blue, Kelly Green, Yellow, Forest Green, Orange, Purple, Black, and Maroon.) 10-year warranty when installed indoors.

5. Goal:

Goal to be DRAPER Model 503576 breakaway goal by Draper, Inc. of Spiceland, IN.

Goal is designed to withstand shock loads due to a player slam dunking and/or hanging on the rim. The rim shall deflect down when a static load in excess of 180 pounds is applied. The rim will return to the playing position once the load is removed. The function of the breakaway goal shall meet all NCAA and NFHS rules. Goal shall be set at factory for

SECTION 116600 - ATHLETIC EQUIPMENT

proper flex and rebound requirements but is field adjustable to ensure continued rule compliance.

Rim is fabricated from a 5/8" diameter steel rod formed into an 18" inside diameter ring. Inside of ring positioned 6" from the face of backboard by a heavy-duty mounting plate with mounting holes centered to match 5" x 5" or 5" x 4" backboard mounting holes. Goal will mount on standard glass, fiberglass, aluminum, steel, and wood backboards.

Rim rigidly braced by means of die cut steel braces formed and welded to underside of rim for maximum support. Goal is provided with twelve "no tie" net attachment clips, welded to rim for net attachment. Goal painted in an official durable orange powder coat and furnished with zinc plated mounting hardware and high-quality white nylon anti-whip net. Goal to have three-year limited warranty.

6. Height Adjuster:

8' to 10' Height Adjuster shall be the DRAPER Model 503093/503097 direct mount electric height adjuster by Draper, Inc., Spiceland, IN.

503093/503097 direct mount electric height adjuster is built with a main frame-assembly constructed of 2" x 2-1/2" x 1/4" steel angle and 1/4" thick flat steel. Slip tubes consist of 2-5/8" O.D. outer tubes and 2-1/4" O.D. inner tubes. The 503093/503097 height adjuster frame assembly is jig welded and factory assembled to ensure precise alignment and smooth operation. The 503093/503097 height adjuster is electrically operated via a 110-volt single-phase linear actuator with a 25% duty cycle. Electric linear actuator provides smooth reversible motion for loads up to 600 pounds. Linear actuator motor includes cam style limit switches that will allow 24" of travel. The motor shall be controlled by an individual flush mounted, three-position, momentary contact tumbler-style key switch.

Height adjuster includes a self-adhesive height scale that is graduated in 1" increments and labeled at 6" intervals. Height scale applied after installation to insure accuracy. Height adjuster covered by one-year limited warranty.

7. Safety Strap:

Safety Strap to be DRAPER model no. 503229 Aut-O-Loc safety strap by Draper, Inc., Spiceland, IN.

Aut-O-Loc Safety Strap is designed to engage instantly whenever a cable or other lifting mechanism fails. Aut-O-Loc is actuated by speed or inertia in order to stop a load from falling due to a sudden failure such as a cable breakage, cable clamp failure or any increase in speed due to failure or back drive of a winch. Aut-O-Loc is rated for a 1000 lbs. (454 Kg) load and incorporates a 2" wide polyester belt with a breaking strength rating of 6000 lbs. (2,721 Kg) to withstand a 1750 lbs. (794 Kg) free-falling load without any failure of components or the belt.

The housing and drum are manufactured from high tensile heat-treated aluminum alloy that naturally resists corrosion without paint. The drum which houses the mechanism is a singular machined piece to retain its structural integrity in the case of a load capture. The locking mechanism always remains in the ready position regardless of whether belt is

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retracting or extending. The unit operates at a sound level less than 20db to allow the operator to clearly hear the operational sounds of the winch and backstop, so they may stop winch operation if there are abnormal audible warnings to indicate possible mechanical issues.

Aut-O-Loc has a universal mount that can accommodate 3 ½" (89 mm) or 4" tube (102 mm) and can mount to support tubes running parallel and/or perpendicular to the backboard. Unit is self-aligning with the use of two integral guide wheel to the force of a fall positions the unit in the ideal plane to prevent damage to unit and the supporting structure. The locking mechanism will fully engage within 3" (76 mm) of belt travel in the event of failure. The locking mechanism utilizes multiple high strength steel pawls that deploy and evenly load the drum and housing when engaged and do not rely on a singular locking mechanism.

Aut-O-Loc's retractable nylon strap includes a brightly colored warning strip that indicates when maximum payout of the belt has been reached. The strap also features a brightly colored warning indicator that deploys automatically when engaged. Aut-O-Loc is permanently locked when a load of more than 1000 lbs. (454 Kg) of force is caught to prevent possible re-use and failure of critical components that are stressed when the unit engages.

2.3 GYMNASIUM DIVIDER CURTAINS

A. Main

1. Top-Roll (1 Required)

a. Type: Electrically operated, Top-Roll gymnasium divider including motor, controls, clamps for attachment to building structure, and other components required for complete functional installation.

b. Operation: Curtain moves by rolling directly onto drive tube without the use of belts or cables.

c. Configuration: Rectangular shape with straight bottom and extending across room as indicated on Drawings.

I. Maximum dimension of stored divider: 14 inches [355 mm] from bottom of structural or supplemental support to bottom of stored curtain.

II. Minimum required clearance between vertical curtain edges and adjacent fixed objects: 6 inches [152 mm].

III. Provide 3 feet [1 m] space between curtain ends and walls or fixed objects to allow passage space around divider.

d. Operating mechanism: Drive pipe winch powered with ¾ HP, 115VAC, 60 cycle, single phase, reversible capacitor, C-Face motor with thermal overload protection. Entire winch assembly to be UL Listed and shall carry a five-year warranty. Provide with load

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holding worm gear reducer and integral limit switches to control curtain travel. Drive pipe shall rotate in pipe support assemblies spaced at approximately 10 feet [3 m].

e. Attachment: Attach to structural or supplemental support with beam clamps, hanger brackets, and 1/2-inch [13 mm] diameter threaded rods. Attachment clamps to be designed to be capable of supporting minimum 5,000 Lbs. each and be of sufficient number to provide a combined minimum 45:1 attachment point safety factor.

f. Drive Pipe: 5-inch [127 mm] diameter steel pipe. Drive pipe shall roll in precision laser cut and formed support assembly. Assemblies spaced at a maximum 10 feet [3 m] on center.

g. Divider bottom: 1-5/8 inch [41 mm] diameter steel pipe batten in 6 inches [152 mm] wide curtain pocket.

h. Curtain Material

I. Bottom 7 feet [2.4 m]: Opaque solid vinyl coated polyester fabric:

i. Weight: 22 ounces per square yard.

ii. Resistant to rot, mildew, fungus and ultraviolet light.

iii. Flammability: Rated self-extinguishing in accordance with California State Fire Code F-230. Class A Rated in accordance with requirements of NFPA-101.

iv. Color: Selected by Architect from manufacturer's standard range.

II. Upper curtain section: Vinyl coated polyester mesh.

i. Weight: 9 ounces per square yard.

ii. Resistant to rot, mildew, fungus and ultraviolet light.

iii. Flammability: Rated self-extinguishing in accordance with California State Fire Code F-230. Class A Rated in accordance with requirements of NFPA-101.

iv. Color: Selected by Architect from manufacturer's standard range.

III. VOC Emission: Divider Curtain Vinyl and Mesh to be low emitting and certified to meet all of the requirements of the GREENGUARD Children & Schools and GREENGUARD certification program. GREENGUARD Children & Schools requires emissions of total volatile organic compounds = 0.22 mg/m³, formaldehyde = 0.0135 ppm, total aldehydes = 0.043 ppm, individual volatile organic compounds = 1/1000 TLV and = 1/2 chronic REL and total phthalates = 0.01 mg/m³. Vinyl and Mesh must be evaluated to indoor air quality evaluation (IAQ) using a GREENGUARD product evaluation protocol following the requirements of The GREENGUARD Environmental Institutes (GEI) Product Certification Program, ASTM Standard D5116 and the United

SECTION 116600 - ATHLETIC EQUIPMENT

States Environmental Protection Agency and modeled based on GEI requirements for a standard gymnasium loading and ASHRAE 62.1 – 2004 ventilation conditions. Manufacturer to provide certificate and/or test results upon request.

IV. Seams: Horizontal and electronically welded with 1 inch [25 mm] full contact weld.

V. Outer edge hems: Turned with welds.

VI. Top Edge: 22 oz. Vinyl, cut square for attachment to roller tube and of sufficient length to allow at least two complete wraps on roller tube at all times.

i. Bottom edge: Vinyl pocket to house bottom pipe batten.

2.4 WALL PADDING

A. Main Gym

Wall padding shall be DRAPER Model ECOVISION GYM WALL PADS, by Draper, Inc. of Spiceland, IN.

Wall pads to be standard sized 2' x 6' and custom sizes as indicated on project plans. Bidder is responsible for verification of job conditions and dimensions.

Wall pads shall be constructed using 7/16" thick urea-formaldehyde free oriented strand board (OSB) backer and 2" thick flexible urethane cushioning material bonded together, then fully wrapped with flexible PVC and scrim laminate that features a leather grain emboss pattern. Cover shall have average weight of 14 oz. per square yard, breaking strength of 350 PSI, tear resistance of 65 pounds and be rated as self-extinguishing in accordance with California State Fire Code F-230 and Class-A Rated in accordance with requirements of NFPA-101. Cover to be resistant to rot, mildew, fungus and ultraviolet light and is available in Red, Dark Blue, Marine Blue, Beige, Grey, Black, Forest Green, Kelly Green, Maroon, Orange, Yellow, White, Purple and Navy Blue. Panel front and edges shall be fully wrapped and securely stapled to the OSB backer so that the backer is not exposed on front or four sides. Pads shall be supplied with 1" fabric wrapped mounting flanges at panel top and bottom.

Entire wall pad assembly shall have been submitted to indoor air quality evaluation (IAQ) using a GREENGUARD product evaluation protocol following the requirements of The UL GREENGUARD Environmental Institutes (GEI) Product Certification Program, ASTM Standard D5116 and the United States Environmental Protection Agency and modeled based on GEI requirements for a standard gymnasium loading and ASHRAE 62.1 – 2004 ventilation conditions. Pad assembly shall qualify as low emitting and found to meet all of the requirements of the UL GREENGUARD GOLD and UL GREENGUARD certification program which are emissions of total volatile organic compounds = 0.22 mg/m³, formaldehyde = 0.0135 ppm, total aldehydes = 0.043 ppm, individual volatile organic compounds = 1/1000 TLV and = ½ chronic REL and total phthalates = 0.01 mg/m³.

Pads shall meet all requirements of ASTM F2440-18

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Manufacturer must be able to provide independent lab and test reports to verify compliance with above standards and certifications.

Provide molded Cut-out trim kits in sizes and quantities indicated on drawings and as required by job conditions. Cut-out trim to be constructed of flexible, flame-retardant molded urethane. Cut-out kits may be single units for switches, receptacles or other small obstructions or field cut and assembled kits that can be cut and assembled to exact shape and size for large obstructions. Choose Black or Gray cut-outs to best match wall pad vinyl.

2.5 VOLLEYBALL EQUIPMENT

A. Main Gym

1. Elite Volleyball System (1 required).

Volleyball System to be DRAPER Model 500041 EVS Elite Volleyball System by Draper, Inc. of Spiceland, IN.

The 500041 EVS consists of one standard with power winch and one standard with adjustable cable anchor collar. Posts are telescoping type to meet all FIVB, USVBA, NCAA and NFHS requirements for competition. Posts allow infinite height adjustment from 6' (1.854 m) to 8' 4" (2.540 m) to meet all age group height settings from elementary school use to international competition for both men and women. EVS incorporates an internal spring assist mechanism for easy, precise and infinite height adjustments. EVS easily locks in place with a pressure lock hand knob and post is clearly marked at normal competition heights.

The 6' (1.890 cm) bottom upright is 3½" O.D. (8.890 cm) schedule 80 aluminum tube, with a wall thickness of .300" (.7620 cm). The bottom upright is provided with a special rubber foot to protect finished floors and to provide precise net height adjustment. The upper telescoping adjustable tube is 2-7/8" OD (7.303 cm) schedule 80 aluminum tube, with a wall thickness of .276" (.7010 cm) with a 4" (10.16 cm) diameter pulley and oilite bushing. Both post sections have a clear anodized finish.

The tensioning winch incorporates a heavy-duty, self-locking worm gear mechanism. Winch furnished with a heavy 2" (5 cm) wide high tensile nylon strap with heavy-duty snap hook to eliminate the possibility of hook breaking and guarantee safe connection to net top cable. The power winch is furnished complete with a folding handle for player safety.

Systems shall come complete with DRAPER Model 500004 Power Volleyball Net. Net is 32' (9.75 M) long x 39-3/8" (1 M) high. Netting is high quality 4" square mesh made of 2.5 mm black knotless nylon with vinyl coated polyester hem double stitched around entire perimeter of net. Top hem of net furnished with a 40'6" long x 1/8" diameter 2000 lb. minimum breaking strength galvanized aircraft cable with a nylon coating (3/16" OD) to protect against fraying. Ends of cable have loops with heavy swaged type fittings for easy installation. Hems in end of net furnished with a pocket for use with a 1/2" diameter fiberglass dowel rod. Ends of net have six 1" wide polypropylene tension straps with

SECTION 116600 - ATHLETIC EQUIPMENT

buckles for providing additional tightening of net. Bottom of net has a 1/4" diameter braided white nylon rope equipped with a spring-loaded, pressure type rope tensioner.

System also to include DRAPER Model 500016 Combination Antenna and Boundary Marker.

Locking Brass Cover Plate Assembly to be DRAPER model 501035 by Draper, Inc. of Spiceland, IN.

Cover plate assembly is solid brass alloy with permanently attached hinged cover. Cover plate assembly is 7 1/2" outside diameter by 1/2" thick. The diameter of the opening to be 4 3/8". Cover plate assembly features a lock mechanism that secures the cover to the ring preventing it from bouncing or creating a dead spot if hit with a ball. Outer ring to have six mounting holes to allow cover plate to be securely attached to floor. Floor plate supplied with six #10 x 1 1/2" brass flat head wood screws for mounting plate to floor. Plate to be installed flush with playing surface.

3. Floor Sleeve (One per cover plate required).

Floor Sleeves to be DRAPER Model 501006 3-1/2" I.D. Floor Sleeve by Draper, Inc. of Spiceland, IN.

Floor sleeve constructed of steel mechanical tubing with an inside diameter of 3-1/2", welded to an octagonal shaped bottom plate. Sleeve is 8-1/2" long and designed to be installed with the bottom at 9 1/2" below the playing surface.

4. Protective Pads for Standards (2 required).

Volleyball Post Padding to be DRAPER Model 5011XX Official Padding for 3-1/2" O.D. Volleyball Systems by Draper, Inc. of Spiceland, IN.

Pads hinged at corners to fold neatly around posts and tensioning winch to provide maximum player protection. Pads are constructed of 1 1/2" thick polyethylene foam filler covered with polyester reinforced vinyl with three (3) hook and loop fastening straps for quick set-up and take-down, and constructed to accommodate winch, or judges stand when used.

Standard pads are Dark Blue in color unless otherwise specified. Last two digits indicate pad color. Colors available: 01 White; 02 Marine Blue; 04 Red; 05 Beige; 06 Orange; 07 Yellow; 08 Grey; 09 Maroon; 10 Dark Blue (standard); 11 Black; 12 Purple; 13 Forest Green.

Pads sold each unless otherwise specified.

Color: Selected by Architect from manufacturers Standard color chart.

SECTION 116600 - ATHLETIC EQUIPMENT

PART 3 – EXECUTION

3.1 PREPARATION

- A. Coordinate support of basketball backstops and gymnasium divider curtains with roof structure to ensure proper distribution of loads and adequacy of attachment points. Ensure that building structure has been designed for loads of specific gymnasium divider to be provided. Provide additional structural framing members as required in accordance with Section 05 1200 Structural steel framing
- B. Coordinate configuration, size, and installation of basketball backstops and gymnasium divider curtains with height, slope, and type of building structure and lighting fixtures, mechanical equipment, ductwork, fire-suppression system, bleachers, athletic equipment, and other potential obstructions.
- C. Field-verify dimensions prior to fabrication.
- D. Coordinate electrical requirements for motorized operating mechanism to ensure proper power source, conduit, wiring, and boxes for keyed switches. Prior to installation, verify type and location of power supply. See “Electrical Contractor Shall Provide and Install”
- E. Coordinate delivery of Volleyball Floor Sleeves and Covers with sub-contractors responsible for installation.
- F. For installations made after wood gymnasium flooring is installed, provide protection and exercise care not to damage flooring.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's written instructions and shop drawings.
- B. Install even, plumb and level.
- C. Install control switch such that operator has view of complete basketball backstop during lowering and raising.
- D. Adjust limit switches of electric winch to ensure accurate position in both stored and lowered positions.

3.3 TESTING AND DEMONSTRATION

- A. Operate basketball backstops to ensure proper lifting and lowering. Adjust as required to ensure smooth operation and accurate positioning.
- B. Demonstrate to Owner's designated representative complete operation and required maintenance.

END OF SECTION

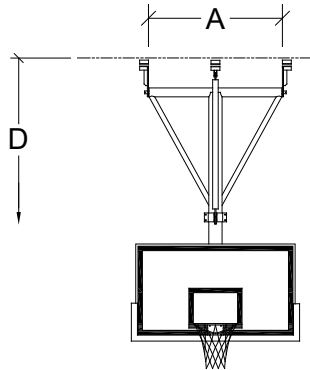
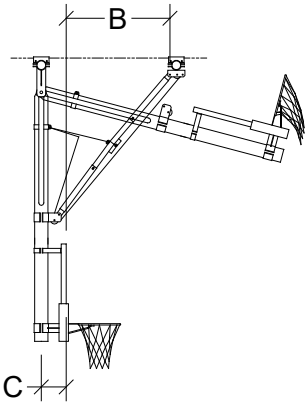
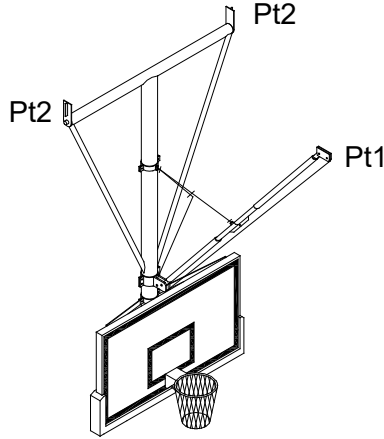


Inside Sales Support
Gym Equipment: 800-989-0131

411 S. Pearl St., Spiceland, IN 47385 USA ■ 765-987-7999 / 800-238-7999
fax 765-987-7142 / 800-323-0522 ■ www.draperinc.com

Job Name: Nancy Lopez Elementary School
Location: Roswell, NM
Architect: PA Architects
Approved by: _____

Approval Date: _____



PRODUCTS:

TF20B Front-Braced, Folds Forward
503136 Rect. Glass 72" x 42" Bank
503576 Breakaway Goal

OPTIONAL EQUIPMENT:

8'-10' Height Adjuster w/Key Switch
503285 Motorized Winch
503229 Aut-O-Loc Safety Belt
5032XX Bolt-on Padding, Color: TBD

DIMENSIONS:

A: 14'-1" Cut Sheet Dimension A
B: 17'-5±" Cut Sheet Dimension B
C: 11-15/16" Cut Sheet Dimension C
D: 34'-0" Attachment Height

GROSS WEIGHT: 3040# (incl. 750# live load)
Weight Distribution in Playing Position:
Pt1: 608# Pt2: 1216# (2 places)

NET WEIGHT: 2290#
Weight Distribution in Stored Position:
Pt1: 1145# Pt2: 572.5# (2 places)

Backstop has Single post design w/25-year warranty; direct mount goal brace.
72" x 42" Glass backboard w/ extruded aluminum frame, for use w/direct-mount goal brace.
Breakaway goal with 12 'no-tie' clips & anti-whip nylon net.
8 to 10 ft. height adjuster features direct goal attachment.
Height adjuster actuated w/ key switch or Smart Gym Touch Pad.
Electric winch has 3/4 HP motor w/helicly-grooved take-up spool.
Safety belt is inertia-sensitive and retracts automatically.
Finish: Choice of either Black or White Powder Coat.

TF20B

Quantity: 2 at Main Court

Created on 1/29/2024 by ETHAN WEESNER

SUPPLIER INFORMATION:

Norcon of New Mexico LLC
8437 Washington Place, STE B
Albuquerque, NM 87113
Phone: (505) 343-8801
Fax: (505) 344-4788
Email: steve.s@norconnewmexico.com

ALL DIMENSIONS AND WEIGHTS ARE APPROXIMATE AND BASED ON INFORMATION PROVIDED AT TIME OF PREPARATION OF THIS DOCUMENT.



Inside Sales Support
Gym Equipment: 800-989-0131

Job Name: Nancy Lopez ES

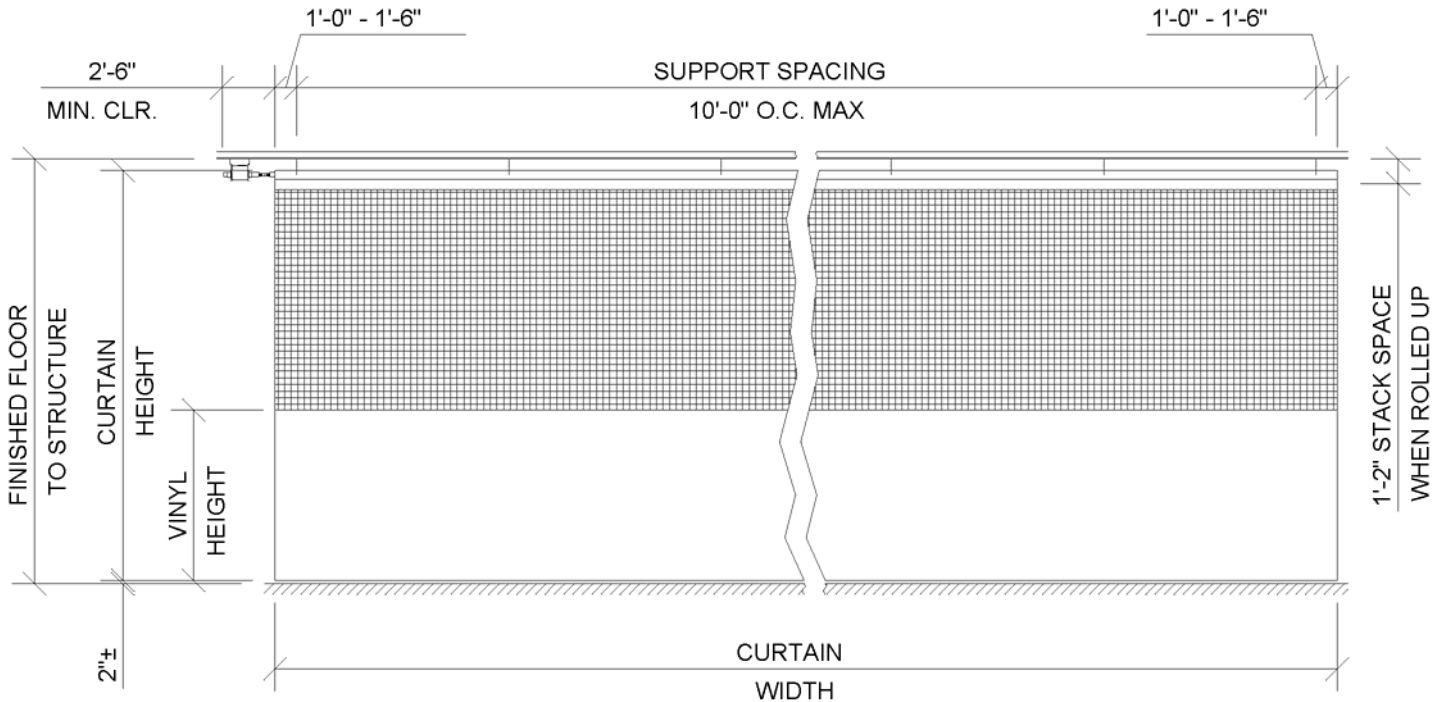
Location: Roswell, NM

Architect: PA Architects

Approved by: _____

Approved date: _____

411 S. Pearl St., Spiceland, IN 47385 USA ■ 765-987-7999 / 800-238-7999
fax 765-987-7142 / 800-323-0522 ■ www.draperinc.com



Finished floor to structure: 23'-0"
Curtain Height: 22'-3 1/2"
Curtain Width: 50'-0"
Vinyl Height: 7'-0"
Approximate weight: 557 lbs.

Top-Roll gym divider stacks to within 14" of structure.
All electrical connections are made at and stay at ceiling level.
The motor is mounted externally, allowing it to cool properly.
Outer edge hems are double turned and double welded to prevent fraying.
Total hanging weight is approximately 1/2 lb. per square foot.

SUPPLIER INFORMATION:

Top-Roll Gym Divider

Quantity: 1

Created on 1/29/2024 by ETHAN WEESNER

Norcon of New Mexico LLC
8437 Washington Place, STE B
Albuquerque, NM 87113
Phone: (505) 343-8801
Fax: (505) 344-4788
Email: steve.s@norconnewmexico.com



Part of the Draper
EcoVision™ range
of products

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SECTION 11 6813 – PLAYGROUND EQUIPMENT

PART 1 -GENERAL

1.1 WORK INCLUDED

- A. Free standing and composite structure playground equipment.

1.2 SUBMITTALS

- A. Submit manufacturer's product data and installation instructions for each type of product indicated.
- B. Submit certification on all play structures validating conformance with the ASTM F1487 Standard.
- C. Submit one copy of Certified Playground Safety Inspector (CPSI) Certification.
- D. Submit samples indicating full range of colors and finishes for each of the materials specified.
- E. Coordination Drawings:
 - 1. Plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 - 1. Extent of surface systems and use zones for equipment.
 - 2. Critical heights for playground surfaces and fall heights for equipment.
 - 2. Qualification Data: For qualified ASTM approved Manufacturer.
 - 3. Product Certificates: For each type of playground equipment, from manufacturer.
 - 4. Material Certificates: For the following items, signed by manufacturers:
 - 1. Shop finishes.
 - 2. Wood-Preservative Treatment: Include certification by treating plant that states type of preservative solution and pressure process used, net amount of preservative retained, and compliance with applicable standards.
 - 3. Recycled plastic.
- F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each type of playground equipment.
- G. Field quality-control reports.
- H. Warranty: Sample of special warranty.

1.3 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For playground equipment and finishes to include in maintenance manuals.
- B. Maintenance Kit: Provide manufacturer's Project-specific maintenance kit containing the following:
 - 1. Notebook or packet with second set of installation documents.
 - 2. Project-specific maintenance documentation with recommendations on how often to inspect, what to look for, and what to do to keep equipment in like-new condition.
 - 3. Touch-Up Kit: Touch-up primer, appropriate color touch-up paint, sandpaper, appropriate color touch-up PVC, and graffiti remover.

4. Additional installation tools for tamperproof fasteners.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm whose playground equipment components have been certified by IPEMA's third-party product certification service.
 1. Provide playground equipment and play structure components bearing the IPEMA Certification Seal.
 2. Provide the following playground equipment and play structure components bearing the IPEMA Certification Seal.
 - a. LSI 210739A,
 - b. LSI 205800A,
 - c. LSI 214441A,
 - d. LSI 214442A,
 - e. LSI182503C.
- B. Installer Qualifications: An employer of workers approved by manufacturer. Installer should have a current CPSI (certified playground safety inspector) license.
- C. Safety Standards: Provide playground equipment complying with or exceeding requirements in ASTM F 1487 & CPSC No. 325.
- D. Preinstallation Conference: Conduct conference at Nancy Lopez Elementary School. Coordinate with owner representative.

1.5 WARRANTY

- A. Manufacturer's Special Warranty: Manufacturer agrees to repair, restore, or replace aluminum posts, steel posts and arches, stainless steel fasteners, clamps, beams, and caps.
 1. Failures include the following:
 1. Structural failures due to corrosion and natural deterioration.
 2. Manufacturer's defects.
 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 2. Warranty Period: 10 years from date of Substantial Completion.
- B. Manufacturer's Special Warranty: Manufacturer agrees to repair, restore, or replace plastic components, steel components excluding posts, climbers, decks, and coatings.
 1. Failures include the following:
 1. Manufacturer's defects.
 2. Deterioration of finishes, and other materials beyond normal weathering.
 2. Warranty Period: 15 years from date of Substantial Completion

PART 2 -PRODUCTS

2.1 BASIS-OF-DESIGN PRODUCT:

- A. Landscape Structures Inc. (LS) as furnished by Exerplay: 12220 N Hwy 14, Suite 5 / PO Box 1160, Cedar Crest, NM 87008; Tel. 800-457-5444. Contact Mark Chavez: 505-907-4521 / mark@exerplay.com
- B. Subject to compliance with requirements, products of equal performance may be used based on the Architect's review of submittals per Section 01 6300 "Product Substitution Procedures v.3.1."

2.2 MATERIALS

A. Sheet Metals:

- 1. Hot-rolled pickled and oiled (HRPO) steel sheet, ASTM A1011, low carbon commercial steel Type B, in thicknesses and perforations where indicated.
- 2. Cold-Rolled Steel Sheet: ASTM A1008, Commercial Steel (CS), Type B; suitable for exposed applications, in thickness indicated.

B. Plastic Components: Play system components, as specified, that are manufactured from color impregnated and mold resistant polyethylene, formulated for maximum color and UV-light stabilization:

- 1. High-Density Polyethylene (HDPE) (Permalene): Fabricated from virgin plastic resin meeting the following:
 - 1. Thickness: 19 mm (19 mm).
 - 2. Density: 0.960 grams per cubic centimeter per ASTM D1505.
 - 3. Tensile Strength: Minimum 16.55 MPa (16.55 MPa) per ASTM D638.
 - 4. Solid Color HDPE: As selected by Architect from manufacturer's full range.
- 2. 2- Color High-Density Polyethylene (HDPE) (Permalene): Fabricated from virgin plastic resin meeting the following:
 - a. Thickness: 19 mm (19 mm) consisting of 2 separate layers.
 - 1) Exterior Layers: 2.5 mm (2.5 mm) each.
 - 2) Interior Core: 14 mm (14 mm).
 - 2. Size: As indicated in Play System Structures Article.
 - 3. Nominal Density: High density, 0.940 to 0.959 g/cu. cm, per ASTM D1505.
 - 4. Tensile Strength: Minimum 16.55 MPa (16.55 MPa) per ASTM D638.
 - 5. 2-Color HDPE: As selected by Architect from manufacturer's full range.
- 3. Recycled High-Density Polyethylene (HDPE) (Permalene): Fabricated from virgin and recycled plastic resins meeting the following:
 - a. Recycled Content of Polyethylene: Postconsumer recycled content pre-consumer recycled content not less than 73 percent.
 - 1) Exterior Layers: 100 percent virgin resin.
 - 2) Interior Core: 100 percent recycled content.
 - b. Thickness: 19 mm (19 mm) consisting of 2 separate layers.

- 1) Exterior Layers: 2.5 mm (2.5 mm) each.
 - 2) Interior Core: 14 mm (14 mm).
- c. Size: As indicated in Play Systems Article.
 - d. Nominal Density: High density, 0.940 to 0.959 g/cu. cm, per ASTM D1505.
 - e. Tensile Strength: Minimum 16.55 (16.55 MPa) per ASTM D638.
 - f. 2-Color HDPE: As selected by Architect from manufacturer's full range.
4. Rotationally Molded HDPE: Fabricated from low-density polyethylene (LDPE) into double-walled components.
 1. Wall Thickness: Varies between 4.7 mm (4.7 mm) (3/16 inch) and 8 mm (8 mm) (5/16 inch), depending on component.
 2. Size: As indicated in Play Systems Article.
 3. Nominal Density: High density, 0.940 to 0.959 g/cu. cm, per ASTM D1505
 4. Tensile Strength: Minimum 17.24 psi (17.24 MPa) per ASTM D638.
 5. Rotationally Molded HDPE Colors: As selected by Architect from manufacturer's full range.
- C. Footing Caps: Fabricated from low-density polyethylene (LDPE). Provide caps with drain hole. Design footing caps to be pressed onto bottom end of related posts and to increase footing area.

2.3 POSTS:

- A. Steel Posts (PlayBooster): Manufactured from 127 mm (127 mm) outside diameter steel tubing. Galvanize posts after rolling. Spray cut ends and inside diameters with corrosion-resistant coating.
 1. Tensile Strength: Minimum 345 MPa psi (345 MPa) per ASTM A500.
 2. Yield Strength: Minimum of 379 MPa (379 MPa) per ASTM A500.
 3. Elongation: 25 percent in 51 mm (51 mm) per ASTM A500.
 4. Modulus of Elasticity: 6894.8 MPa (6894.8 MPa) per ASTM A500.
- B. Aluminum Posts (PlayBooster): Manufactured from 127 mm (127 mm) outside diameter, 6005-T5 extruded aluminum tubing with wall thickness of 3.2 mm (3.2 mm) per ASTM B221.
 1. Tensile Strength: Minimum 345 MPa (345 MPa) per ASTM B221.
 2. Yield Strength: Minimum of 379 MPa (379 MPa) per ASTM B221.
 3. Elongation: 10 percent in 51 mm (51 mm) per ASTM B221.
 4. Modulus of Elasticity: 6894.8 MPa (6894.8 MPa) per ASTM B221.
- C. Direct Bury Posts LSI No. 11404J: Fabricated from continuous extruded aluminum or steel.
 1. Post Lengths: Provide posts in lengths as required to meet play system design, bury line requirements, and local jurisdiction frost footing depths.
 - a) Deck Post Heights: Fabricate posts to ensure a minimum of 1067 mm (1067 mm) above specified deck heights in finished systems.
 - b) Post Markings: Fabricate posts with "finished grade marker" located to identify bury line required for correct installation and top of loose fill protective surfacing. Minimum bury line is 863 mm (863 mm).
 2. Finish: Powder-coated.
 3. Color: As selected by Architect from manufacturer's full range.

D. Post Caps: Die-cast from 369.1 aluminum alloy with powder coat finish matching adjacent posts. Factory-install caps and secure in place with 3 self-sealing rivets.

1. Finish: Powder-coated.
2. Color: As selected by Architect from manufacturer's full range.

E. Decks

1. Decks(TenderDecks): Fabricated from 2.7 mm (2.7 mm) (12 gage) thick HRPO sheet steel to meet specified modular design. Provide decks with no unsupported area larger than 0.33 sq. m (0.33 sq. m) and with sides that are flush with outside edge of supporting posts.

1. Horizontal Surfaces: Perforated panels with 8 mm (8 mm) holes at 25 mm (25 mm) on center in staggered rows as indicated on approved Shop Drawings.

1) Hole Size: Finished hole size indicated is maximum size after PVC coating application.

2. Flanges: Fabricate perimeter edges of deck sheet steel to produce reinforcement angle flanges in configurations indicated in approved Shop Drawings. Design perimeter flanges to provide structural reinforcement, with appropriately spaced and sized mounting holes. Provide a minimum of 4 mounting holes per flange to accommodate face mounting of specified system components.

3. Finish: PVC coating.

4. Color: As selected by Architect from manufacturer's full range.

F. Accessories

1. Standard Clamps: Die-cast from 369.1 aluminum alloy with each clamp assembly having appropriate number of half clamps fastened to mating parts with two 10 mm (10 mm) by 29 mm (29 mm) stainless steel pinned button head cap screws and 2 stainless steel recessed "T" nuts. Provide 6 mm (6 mm) aluminum drive rivet with stainless steel pin to secure fit to post. Provide clamps complying with the following requirements:

1. Tensile Strength: Minimum 324 MPa (324 MPa).
2. Yield Strength: Minimum of 193 MPa (193 MPa).
3. Shear Strength: Minimum of 200 MPa (200 MPa).
4. Elongation: 7 percent in 51 mm (51 mm).
5. Endurance Limit: Minimum of 138 MPa (138 MPa).

6. Clamp Assemblies: The following clamp types are used with play system structures where indicated: Each type of clamp below incorporates manufacturer's cast aluminum half-clamp assembly.

1) Type 1: Offset hanger clamp assembly.

2) Type 2: Deck hanger clamp assembly.

3) Type 3: Hanger clamp assembly.

4) Type 4: Access panel clamp assembly manufactured from the following 2 products:

i. Access clamp assembly. Fabricated from 1/4 inch (6.4 mm) flat steel and 6.4 mm (6.4 mm) by 45 mm (45 mm) wide steel clamp.

ii. Half clamp assembly. Fabricated from cast aluminum.

7. Finish: Powder-coated.

8. Color: As selected by Architect from manufacturer's full range.

2. Brackets: Where indicated, provide 1 of the following appropriate mounting brackets:
 1. Steel Brackets:
 - 1) Standard Brackets: 1.52 mm (1.52 mm) (16 gage) thick HRPO sheet steel.
 - a) Finish: Zinc coating by hot-dip process per ASTM A123 or ASTM A153 with clear chromate wash treatment after fabrication.
 - 2) Rain Sound Wheel Panel Bracket: 1.52 mm (1.52 mm) (16 gage) thick HRPO sheet steel.
 - a) Finish: Zinc coating by hot-dip process per ASTM A123 or ASTM A153 with clear chromate wash treatment after fabrication.
 - 3) Angle Bracket: 3.05 mm (3.05 mm) (11 gage) thick HRPO sheet steel.
 - a) Finish: Powder-coated.
 - b) Color: Match adjacent panel color.
 3. Aluminum Brackets: Fabricated from 5052-H32 aluminum angle, 4.8 mm (4.8 mm) thick formed with two 28.5 mm (28.5 mm) outside diameter by 38 mm (38 mm) long 6005-T5 aluminum threaded tubes.
 1. Finish: Powder-coated.
 2. Color: As selected by Architect from manufacturer's full color range.

G. Fasteners

1. Stainless steel per ASTM F879, socketed and pinned tamperproof. Provide fasteners with locking patch-type material that meets minimum torque requirements of IFI-125.
2. Provide manufacturer's proprietary tools for pinned tamperproof fasteners.

H. Spacers

1. Where specified, provide one of the following spacers.
2. Stainless Steel Spacer – Type 1: Stainless steel, 19 mm (19 mm) diameter by 54 mm (54 mm) long.
3. Aluminum Spacer – Type 2: 6061-T6 aluminum alloy tubing, 22 mm (22 mm) outside diameter by 43 mm (43 mm) long.
 1. Finish: Powder-coated.
 2. Color: As selected by Architect from manufacturer's full color range.

I. Bearings

1. Flanged bearing fabricated from bronze alloy.
 1. Products: Subject to compliance with requirements, provide bearings by the following:
 - 1) Beemer Precision, Inc.: Flange Oilite Bearings or approved substitutions.
 2. Size: 41.3 mm (41.3 mm) outside diameter by 25 mm (25 mm) long.

J. Cable

1. Fabricated of round, 6-stranded, tempered, galvanized steel cables with a polypropylene core. External strands are covered with non-abrasive, UV-resistant, polyamide-yarn inductively fused to strands. Polyurethane-coated cables are not acceptable.
 1. Cable Diameter: 16 mm (16 mm) unless indicated otherwise.

2. Color: As selected by Architect from manufacturer's full range.

K. Concrete Footing Materials And Properties

1. Comply with requirements in Section 033000 – Cast-in-Place Concrete for normal-weight, air-entrained, ready-mix concrete with a minimum 28-day compressive strength of 20 MPa (20 MPa) unless otherwise indicated.

2.4 PLAY COMPONENTS

A. LSI 210739A Venti Alum Posts DB

1. Alum Posts DB (refer to posts section above) Post: See PlayBooster (PB) General Specifications.
2. Clamps: Cast aluminum.
 1. Finish: ProShield, color specified
 2. Net Clamp: Weldment comprised of 1/4" x 1 3/4" (6,35 mm x 44,45 mm) HRPO flat steel and .375"(9,53 mm) stainless steel sheet. Finish: ProShield, color specified.
3. Slide Support:
 1. Weldment comprised of 2.375" (60,33 mm) O.D. RS-20 (.095" - .105") (2,41 mm-2,66 mm)galvanized steel tubing and 1/4" x 3" (6,35 mm x 76 mm) mounting plate.
 2. Finish: ProShield, color specified.
4. Handhold Panel: Permalene, color specified.
5. Belt: Made from .315" (8,00 mm) thick mini rough top 3-ply rubber belting, black in color.
6. Rail: Extruded from 1.125" ((28,58 mm) O.D. x .312" (7,92 mm) wall.
 1. .6005-T5 aluminum.
 2. Finish: ProShield, color specified.
7. Slide Hood: Rotationally molded from U.V. stabilized linear low density polyethylene, color specified.
8. Slide: Rotationally molded from U.V. stabilized linear low density polyethylene, color specified
Fasteners: a.Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTMb.F 879 unless otherwise indicated (see specific product installation/specifications).
9. Rail Spacer: Fabricated from 1.312" (33,32 mm) O.D. x 16 GA (.065") (1,65 mm) steel tubing.
 1. Finish: ProShield, color specified.
 2. Chain: Steel 1/4" (6,35 mm) straight link chain, 3,150 lb (1428,82 kilograms). working load limit.
 - 1) Finish: ProGuard
10. Ball Knot: Rotationally molded from U.V. stabilized linear low density polyethylene, color specified.
11. Opaque Handhold:
 1. Permalene® panel, Natural in color.
12. Vertical Panel Climber:
 1. Recycled Permalene®, black in color.
13. Insert/ Handhold Panels:
 1. Recycled Permalene®, color specified.
14. Kick Plate:

1. Fabricated from 11 GA (.120") (3,04 mm) HR flat steel.
 2. Finish: TenderTuff, gray in color.
15. Square Deck:
1. Flange formed from 12 GA (.105") (2,66 mm) sheet steel conforming to ASTM A1011.
 2. Standing surface is perforated with 5/16" (7,92 mm) diameter holes.
 3. Deck face has (4) slotted holes for face mounting components.
 4. The finished size measures 2 5/8" x 47" x 47" (66,68 mm x 1194 mm x 1194 mm).
 5. Finish: TenderTuff, gray in color.
16. Lumber:
1. Recycled high-density polyethylene, mink in color.
17. Lower Tubes:
1. Weldment comprised of 2.375" (60,32 mm) O.D. x .130" - .140" (3,30 mm-3,55 mm) wall RS40 galvanized steel tube, 1/4" (6,35 mm) thick HRPO steel plate and 3/8" (9,52 mm) thick stainless steel plate.
 2. Finish: ProShield, color specified.
18. Upper & Lower Rails:
1. Weldment comprised of 2.375" (60,32 mm) O.D. x .130" - .140" (3,30 mm-3,55 mm) wall RS40 galvanized steel tube, 1/4" (6,35 mm) thick HRPO steel plate and 3/8" (9,52 mm) thick stainless steel plate.
 2. Finish: ProShield, color specified.
19. Connecting Bracket:
1. Weldment comprised of 3/8" (9,52 mm) thick HRPO steel plate and 3/8" (9,52 mm) thick stainless steel plate
 2. Finish: ProShield, color specified
20. Overhead Beam:
1. Weldment comprised of 5" (127 mm) O.D. x 11 Ga. (.120") (3,05 mm) wall galvanized steel tube, and 1.315" (33,40 mm) O.D. x .080" - .090" (2,03 mm-2,28 mm) wall RS20 galvanized steel tube.
 2. Finish: ProShield, color specified.
21. Overhead Vertical Support:
1. Weldment comprised of 5" (127 mm) O.D. x 11 Ga. (.120") (3,05 mm) wall galvanized steel tube, and 1.315" (33,40 mm) O.D. x .080" - .090" (2,03 mm-2,28 mm) wall RS20 galvanized steel tube.
 2. Finish: ProShield, color specified.
22. Grab Bar:
1. Weldment comprised of formed 7/8" O.D. 11 GA (.120") and 1/4" x 1 3/4" stainless steel half clamp.
 2. Finish: TenderTuff™, gray in color.
23. Net/Rope:
1. Made of tightly woven polyester-wrapped, six-stranded galvanized-steel cable with a polypropylene core, black in color. (Connectors) 6063-T6 aluminum.
24. Horizontal Net Support:
1. Weldment comprised of 5" (127 mm) O.D. x 11 Ga. (.120") (3,05 mm) wall galvanized steel tube, 1/4" (6,35 mm) thick HRPO steel plate and 3/8" (9,52 mm) thick stainless steel plate.
 2. Finish: ProShield®, color specified.
25. Beam Support:
1. Made from 5" (127 mm) O.D. x 11 Ga. (.120") (3,05 mm) wall galvanized steel tube.
 2. Finish: ProShield®, color specified.

26. Spacer Bar:
 1. Weldment comprised of 1.660" (42,16 mm) O.D. x .111" - .121" (2,81 mm-3,07 mm) wall RS40 galvanized steel tube, and 1/4" (6,35 mm) thick HRPO steel plate.
 2. Finish: ProShield, color specified.
27. Net Pod:
 1. Rotationally molded from U.V. stabilized linear low density polyethylene, color specified.
28. Transfer Station:
 1. Weldment comprised of 2.375" (60,32 mm) O.D. x .130" - .140" (3,30 mm-3,55 mm) wall RS40
 2. galvanized steel tube, 1.900" (48,26 mm) O.D. x .090" - .100" (2,28 mm-2,54 mm) wall RS20
 3. galvanized steel tube, 1.029" (26,13 mm) O.D. x .070" - .080" (1,77 mm-2,03 mm) wall RS20
 4. galvanized steel tube and 1/4" (6,35 mm) thick HRPO steel plate.
 5. Finish: ProShield, color specified.
29. Lower Step:
 1. Weldment comprised of 1.900" (48,26 mm) O.D. x .120" - .130" (3,01 mm-3,30 mm) wall RS40 galvanized steel tube, and 1/4" (6,35 mm) thick HRPO steel plate.
 2. Finish: ProShield, color specified.
 3. GripX: .750" (19,05 mm) Thick Permalene®, black in color.
30. Lumber Mounting Panel:
 1. Made from 1/4" (6,35 mm) thick HRPO steel plate.
 2. Finish: ProShield®, color specified.
31. Fire Pole:
 1. Weldment comprised of 1.900" (48,26 mm) O.D. RS40 (.120"-.130") (3,05 mm - 3,30 mm)wall galvanized steel tubing and 1/4" (6,35 mm) HRPO steel sheet.
 2. Finish: ProShield®, color specified.
32. Barrier:
 1. Weldment comprised of 1.125" O.D. 11 GA. (.120") steel tube per ASTM A513 with 203 or303 stainless steel threaded inserts with 5/8" internal threads and 1/4" tabs.
 2. Finish: TenderTuff™, gray in color.
33. Infill Panel:
 1. Recycled Permalene®, Natural in color.
34. Lumber Climber:
 1. Weldment comprised of 2.375" (60,32 mm) O.D. x .130" - .140" (3,30 mm-3,55 mm) wallRS40 galvanized steel tube, and 1/4" (6,35 mm) thick HRPO steel plate.
 2. Finish: ProShield, color specified.
35. Bridge Handhold:
 1. Recycled Permalene® panel, color specified.
36. Bridge Post:
 1. Weldment comprised of 2.375" (60,32 mm) O.D. x .095" - .105" (2,41 mm-2,66 mm) wallRS20 galvanized steel tubeand 1.315" (33,40 mm) O.D. x .080" - .090" (2,03 mm-2,28 mm)wall RS20 galvanized steel tube.
 2. Finish: ProShield, color specified.
37. Platform:
 1. Weldment comprised of 3.500" (88,9 mm) O.D. x .125" (3,17 mm) wall galvanized steeltube, and 1/4" (6,35 mm) thick HRPO steel sheet.
 2. Finish: ProShield®, color specified.
38. Chinning/Turning Bar:
 1. Weldment comprised of 1.660" (42,16 mm) O.D. RS20 (.120" - .130") (3,05 mm-3,30 mm)wall galvanized steel tubing and 7 Ga. (4,54 mm) HRPO sheet steel.

2. ProShield, color specified.
39. Angled Loop Climber:
 1. Weldment comprised of 2.375" (60,32 mm) O.D. x .095" - .105" (2,41 mm-2,66 mm) wall
 2. RS20 galvanized steel tube, 1.315" (33,40 mm) O.D. x .080" - .090" (2,03 mm-2,28 mm) wall
 3. RS20 galvanized steel tube, and 1/4" (6,35 mm) thick HRPO steel sheet.
 4. Finish: ProShield, color specified.
40. Club House:
 1. Weldment comprised of 2.375" (60,32 mm) O.D. x .130" - .140" (3,30 mm-3,55 mm) wall RS40 galvanized steel tube, and 1/4" (6,35 mm) thick HRPO steel sheet.
 2. Finish: ProShield, color specified.
41. Club House Seat:
 1. Weldment comprised of 2.375" (60,32 mm) O.D. x .130" - .140" (3,30 mm-3,55 mm) wall RS40 galvanized steel tube, and 1/4" (6,35 mm) thick HRPO steel sheet.
 2. Finish: ProShield, color specified.
42. Clamp Insert:
 1. Weldment comprised of 1.125" (28,57 mm) O.D. x 11 GA (.120") (3,04 mm) steel tubing with 203 or 303 stainless steel inserts, with 3/8" (9,52 mm) internal thread and 1/4" (6,35 mm) HRPO steel plate.
 2. Finish: ProShield®, color specified.
43. Vert. Tight Rope Rail:
 1. Weldment comprised of 2.375" (60,32 mm) O.D. x .130" - .140" (3,30 mm-3,55 mm) wall
 2. RS40 galvanized steel tube, 1.029" (26,13 mm) O.D. x .070" - .080" (1,77 mm-2,03 mm) wall
 3. RS20 galvanized steel tube and 3/8" (9,52 mm) thick stainless steel sheet. Finish:
 4. ProShield, color specified.
44. Upper Tight Rope Rail:
 1. Weldment comprised of 2.375" (60,32 mm) O.D. x .130" - .140" (3,30 mm-3,55 mm) wall
 2. RS40 galvanized steel tube, 1.029" (26,13 mm) O.D. x .070" - .080" (1,77 mm-2,03 mm) wall
 3. RS20 galvanized steel tube and 1/4" (6,35 mm) thick HRPO steel sheet.
 4. Finish: ProShield, color specified.
45. Tight Rope:
 1. Made of tightly woven polyester-wrapped, six-stranded galvanized-steel cable with a polypropylene core,
 2. black in color.
 3. (Connectors) 6063-T6 aluminum.
46. Belt Handhold:
 1. Recycled Permalene® panel, color specified.
47. Belt Support Plate:
 1. Made from 1/4" (6,35 mm) thick HRPO steel plate.
 2. Finish: ProShield, color specified.
48. Hammock Washer Plate:
 1. Made from 1/8" (3,17 mm) thick HRPO steel plate.
 2. Finish: ProShield, color specified.
49. Belt Handrail:
 1. Weldment comprised of 1.315" (33,40 mm) O.D. x .080" - .090" (2,03 mm-2,28 mm) wall
 2. RS20 galvanized steel tube and 1/4" (6,35 mm) thick HRPO steel plate.
 3. Finish: ProShield, color specified.
50. Belt Support:
 1. Weldment comprised of 2.375" (60,32 mm) O.D. x .095" - .105" (2,41 mm-2,66 mm) wall
 2. RS20 galvanized steel tube and 1/4" (6,35 mm) thick HRPO steel plate.

3. Finish: ProShield, color specified.
- B. LSI 205800A TopsyTurny Spinner 42" Bury DB Only
1. Fasteners:
 1. Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST) per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).
 2. GripX Deck Surface:
 1. 3/4" (19,05 mm) Thick Permalene®, black in color.
 3. Post: Assembly:
 1. Weldment comprised of 5" (127 mm) O.D. x 7 GA. (.179") (4,54 mm) galvanized steel tubing and steel bearing shaft.
 2. Finish: ProShield, color specified.
 3. (Bushing) .209" (5,30 mm) thick oil filled UHMW PE.
 4. Spinner Bottom:
 1. Weldment comprised of 1.660" (42,16 mm) O.D. RS40 (.111"-.121" (2,81 mm-3,07 mm) wall galvanized steel tubing, 6.000" (152 mm) O.D. x 7 GA. (.179") (4,54 mm) wall stainless steel tube, 3/8" (9,52 mm) HRPO steel sheet, 1/4" (6,35 mm) HRPO steel sheet.
 2. Finish: ProShield, color specified.
 5. Top Assembly:
 1. Weldment comprised of 1.660" (42,16 mm) O.D. RS20 (.085"-.095" (2,16 mm-2,41 mm) wall galvanized steel tubing, 1/4" (6,35 mm) HRPO steel sheet, 3/8" (9,52 mm) HRPO steel sheet, 11 GA.(.120") (3,05 mm) HRPO sheet steel and 4.56" (115,82 mm) I.D. x 5.500" (139,7 mm) O.D. steel bar.
 2. (Bearings) Deep groove ball bearings, single row seal on both sides.
 3. Finish: ProShield, color specified.
 6. Spinner Clamp:
 1. Cast from 356-T6 aluminum.
 2. Finish: ProShield®, color specified.
 7. Top Cone:
 1. Rotationally molded from U.V. stabilized linear low-density polyethylene, color specified.
 8. Brake Guards:
 1. Recycled Permalene®, black in color.
 9. Base Ring:
 1. Recycled Permalene®, black in color.
 10. Rotor:
 1. Fabricated from 1/4" (6,35 mm) stainless steel sheet.
 11. Base Cone:
 1. Rotationally molded from U.V. stabilized linear low-density polyethylene, color specified.
 12. Brake Mount Assembly:
 1. Comprised of 1/4" (6,35 mm) HRPO steel sheet, 3/8" (9,52 mm) O.D. steel rod.
 2. Finish: ProShield, color specified.
 3. (Brake) .375" (9,52 mm) thick UHMW PE.
 13. Cable Assembly:
 1. (Cable) Made of tightly woven polyester-wrapped, six-stranded galvanized-steel cable with a polypropylene core, red or black in color.
 2. (Cable Connectors) 6063-T6 aluminum.

C. LSI 214441A Rhapsody Vivo Metallophone DB

1. Fasteners:
 1. Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST)per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).
2. Top & Bottom Panels:
 1. Permalene®, color specified.
3. Cradle Bracket:
 1. Made from 1/4" (6,35 mm) thick HRPO steel sheet.
 2. Finish: ProShield®, color specified.
4. Mallet:
 1. Comprised of 2" (50,8 mm) diameter grey& black polyurethane,
 2. 1/2" (12,7 mm) diameter aluminum handle and 3/16" (4,74 mm) diameter stainless steel cable with nylon coating.
5. Tubes:
 1. Made from 1.250" (31,75 mm) diameter x .125" (3,17 mm) wall aluminum tube.

D. LSI 214442A Rhapsody Grandioso Chimes DB

1. Fasteners:
 1. Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST)per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).
2. Mallet:
 1. Comprised of 2" (50,8 mm) diameter grey& black polyurethane, 1/2" (12,7 mm) diameter aluminum handle and 3/16" (4,74 mm) diameter stainless steel cable with nylon coating.
3. Tube:
 1. Comprised of 3.000" (76,2 mm) O.D. x (.125")(3,17 mm) wall aluminum tubing, and 1/2" (12,7 mm) diameter aluminum rod.
4. Frame:
 1. Weldment comprised of 3.500" (88,9 mm) O.D. RS20 (.125")(3,17 mm) wall galvanized steel tubing, 1/4" stainless steel sheet and 1/4" (6,35 mm) thick HRPO steel sheet.
 2. Finish: ProShield®, color specified.
5. Base/Tab Plate:
 1. Weldment comprised of 3/8" (9,52 mm) thick HRPO steel sheet, and 1/4" (6,35 mm) thick stainless-steel sheet.
 2. Finish: ProShield®, color specified.
6. Mallet Bar:
 1. Weldment comprised of 2.375" (60,32 mm) O.D. RS40 (.130"-.140")(3,30 mm-3,55 mm) wall galvanized steel tubing, and 1/4" (6,35 mm) thick HRPO steel sheet.
 2. Finish: ProShield®, color specified.
7. Mallet Mount:
 1. Permalene®, color specified.
8. Footer:
 1. Weldment comprised of 2.375" (60,32 mm) O.D. RS20 (.095"-.105")(2,41 mm-2,66 mm) wall galvanized steel tubing, and 1/4" (6,35 mm) thick HRPO steel sheet.
 2. Finish: ProShield®, color specified
9. Cradle Top & Bottom:
 1. Permalene®, color specified.
10. Cables:
 1. Comprised of 3/16" (4,74 mm) diameter stainless steel cable with nylon coating.

11. Music Hook:

1. Fabricated from 7 GA. (.188")(4,77 mm) stainless steel.

E. LSI182503C Welcome Sign (LSI Provided) Ages 5-12 years Direct Bury

1. Sign Panel:

1. Panel is fabricated from 1/8" (.125")(3,17 mm) aluminum plate.
2. Finish: ProShield®, gray in color.
3. (Sign) Digital image is transferred to a 1/8" (.125")(3,17 mm)
4. ProShield coated aluminum plate, then infused into the ProShield.

2. Post:

1. Weldment comprised 2.375" (60,33 mm) O.D. RS20 (.095-.105) (2,41 mm-2,67 mm) wall galvanized tube, 1/4" (6,35 mm) HRPO steel sheet and aluminum post cap.
2. Finish: ProShield, color specified.

3. Fasteners:

1. Primary fasteners shall be socketed and pinned tamperproof in design, stainless steel (SST)per ASTM F 879 unless otherwise indicated (see specific product installation/specifications).

3.0 INSTALLATION

- A. Installation documentation: all shipments shall include a notebook or packet of order-specific, step-by-step instructions for assembly of each component, including equipment assembly diagrams, estimated hours for assembly, footing dimensions, concrete quantity for direct bury components, fall height information, area required information and detailed material specifications.
- B. Packing list: all shipments shall include a packing list for each skid/container, specifying the part numbers and quantities on each skid or within each container.
- C. Packaging: all components shall be individually wrapped, or bulk wrapped and placed on skids (pallets) then shrink-wrapped to provide protection during shipment. Small parts and hardware packages will be placed in crates for shipment. Other components shall be individually wrapped, or bulk wrapped to provide protection during shipment.
- D. Maintenance Kit: An order-specific maintenance kit shall be provided for each structure order. The kit will include a notebook or packet with a second set of installation documents and order-specific maintenance documentation with recommendations on how often to inspect, what to look for and what to do to keep the equipment in like-new condition. The kit also includes touch-up primer, appropriate color touch-up paint, sandpaper, appropriate color touch-up PVC and additional installation tools for the tamperproof fasteners.
- E. Protection: Provide final protection and maintain conditions, acceptable to manufacturer and installer, that ensure entrance and storefront systems are without damage or deterioration at Substantial Completion.

END OF SECTION 11 6813

SECTION 12 2413 - ROLLER SHADES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Manually operated sunscreen roller shades.
- B. Electrically operated sunscreen roller shades.
- C. Local group and master control system for shade operation with addressable motors.

1.2 RELATED SECTIONS

- A. Section 061053 - Miscellaneous Carpentry: Wood blocking and grounds for mounting roller shades and accessories.
- B. Section 092216 - Non-Structural Metal Framing and Section 09 29 00 Gypsum Board Assemblies: Coordination with gypsum board assemblies for installation of shade pockets, closures and related accessories.
- C. Section 095100 - Acoustical Ceilings: Coordination with acoustical ceiling systems for installation of shade pockets, closures and related accessories.
- D. Division 16 - Electrical: Electric service for motor controls.

1.3 REFERENCES

- A. ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
- B. NFPA 70 - National Electrical Code.
- C. NFPA 701-99 - Fire Tests for Flame-Resistant Textiles and Films.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
Submit Environmental Certification and Third-Party Evaluation per Section 1.5 Qualifications.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Styles, material descriptions, dimensions of individual components, profiles, features, finishes and operating instructions.
 - 3. Storage and handling requirements and recommendations.
 - 4. Mounting details and installation methods.
 - 5. Typical wiring diagrams including integration of motor controllers with building management system, audiovisual and lighting control systems as applicable.

6. Signed letter from the manufacturer stating the subcontractor is an authorized dealer and will be providing shades for this project.
- C. Window Treatment Schedule: For all roller shades. Use same room designations as indicated on the Drawings and include opening sizes and key to typical mounting details.
- D. Selection Samples: For each finish product specified, one set of shade cloth options and aluminum finish color samples representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, one complete set of shade components, unassembled, demonstrating compliance with specified requirements. Shadecloth sample and aluminum finish sample as selected. Mark face of material to indicate interior faces.
- F. Maintenance Data: Methods for maintaining roller shades, precautions regarding cleaning materials and methods, instructions for operating hardware and controls.
- G. ShadeCloth Cleanability and Disinfecting: ShadeCloth must meet cleanability and disinfecting requirements via independent and certified 3rd party testing lab which complies with BIFMA HCF 8.1-2014 standards using chemical solutions compliant with EPA guidelines for use against COVID-19, outlining approved and applicable chemicals and percentage of applicable concentrations by fabric content and type.
- H. Installer must provide a signed letter from the manufacturer stating they are an authorized dealer and must provide a copy of their subcontractor's license proving they have been in the window covering business for fifteen years.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Obtain roller shades through one source from a single manufacturer with a minimum of twenty years experience in manufacturing products comparable to those specified in this section.
- B. Installer Qualifications: Installer trained and certified by the manufacturer with a minimum of fifteen years in the window covering business (based on the issue date of the subcontractor license) in the state of the project with a minimum of fifteen years experience in installing products comparable to those specified in this section. Installer must have completed a minimum of five comparable projects. Installer must provide a signed letter from the manufacturer stating they are an authorized dealer and must provide a copy of their subcontractor's license proving they have been in the window covering business for fifteen years.
- C. Fire-Test-Response Characteristics: Passes NFPA 701-99 small and large-scale vertical burn. Materials tested shall be identical to products proposed for use.
- D. Electrical Components: NFPA Article 100 listed and labeled by either UL or ETL or other testing agency acceptable to authorities having jurisdiction, marked for intended use, and tested as a system. Individual testing of components will not be acceptable in lieu of system testing.
- E. Anti-Microbial Characteristics: 'No Growth' per ASTM G 21 results for fungi ATCC9642, ATCC 9644, ATCC9645.

- F. ShadeCloth Cleanability and Disinfecting: ShadeCloth must meet cleanability and disinfecting requirements via independent and certified 3rd party testing lab which complies with BIFMA HCF 8.1-2014 standards using chemical solutions compliant with EPA guidelines for use against COVID-19, outlining approved and applicable chemicals and percentage of applicable concentrations by fabric content and type.
- G. Mock-Up: Provide a mock-up (manual shades only) of one roller shade assembly for evaluation of mounting, appearance and accessories.
 - 1. Locate mock-up in window designated by Architect.
 - 2. Do not proceed with remaining work until, mock-up is accepted by Architect.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver shades in factory-labeled packages, marked with manufacturer and product name, fire-test-response characteristics, and location of installation using same room designations indicated on Drawings and in the Window Treatment Schedule.

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Install roller shades after finish work including painting is complete and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.8 WARRANTY

- A. Provide manufacturer's standard warranties, including the following: Roller Shade Hardware and Shadecloth (except EcoVeil™): Manufacturer's standard non-depreciating twenty-five year limited warranty.
 - 1. EcoVeil standard non-depreciating 10-year limited warranty.
- B. Roller Shade Motors and Motor Control Systems: Manufacturer's standard non-depreciating five-year warranty.
- C. Roller Shade Installation: One year from date of Substantial Completion, not including scaffolding, lifts or other means to reach inaccessible areas.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: MechoShade; 42-03 35th Street, Long Island City, NY 11101. Local representative: Kathleen Powers: T 480-231-7417, email: kathleen.powers@springwindowfashions.com
- B. Substitutions: See Section 01 3300.

2.2 APPLICATIONS/SCOPE

A. Roller Shade Schedule:

1. Shade Type 1: Manual operating, chain drive, sunscreen roller shades in all exterior windows of rooms and spaces shown on the Drawings.
2. Shade Type 2: Motorized interior solar roller shades in all exterior windows of rooms and spaces shown on Drawings, and related motor control systems. Shades with the top of the shade more than 25' AFF or/and bottom of shade is 15'0" above finished floor must have catch pin brackets and guide cables.
3. Maximum width of shade 4' -0" in any location.

2.3 SHADE CLOTH

A. Cleanability and Disinfecting: ShadeCloth must meet cleanability and disinfecting requirements via independent and certified 3rd party testing to comply with BIFMA HCF 8.1-2014 standards using chemical solutions compliant with EPA guidelines for use against COVID-19, outlining approved and applicable chemicals and percentage of applicable concentrations by fabric content and type.

B. Visually Transparent Single-Fabric Shadecloth: MechoShade Systems, Inc., ThermoVeil group, single thickness non-raveling 0.030-inch (0.762 mm) thick vinyl fabric, woven from 0.018-inch (0.457 mm) diameter extruded vinyl yarn comprising of 21 percent polyester and 79 percent reinforced vinyl, in colors selected from manufacturer's available range. Solar shadecloth containing fiberglass is not acceptable.

1. Extra - Dense Linear Weave "0900 series", 0-1 percent visually translucent linear weave pattern.
2. Dense Basket Weave: "1700 series" 1 percent open, 2 x 2 dense basket-weave pattern.
3. Color: Selected from manufacturer's standard colors.

C. Visually transparent Single Fabric Shadecloth: MechoShade's SoHo series non raveling polyester/vinyl yarn. Solar shadecloth containing fiberglass is not acceptable.

Basketweave "1100" series, 1percent open.

1. Color: Selected from manufacturer's standard colors.

2.4 SHADE BAND

A. Shade Bands: Construction of shade band includes the fabric, the hem weight, hem-pocket, shade roller tube, and the attachment of the shade band to the roller tube. Sewn hems and open hem pockets are not acceptable.

1. Hem Pockets and Hem Weights: Fabric hem pocket with RF-welded seams (including welded ends) and concealed hem weights. Hem weights shall be of appropriate size and weight for shade band. Hem weight shall be continuous inside a sealed hem pocket. Hem pocket construction and hem weights shall be similar, for all shades within one room.
2. Shade band and Shade Roller Attachment:
 - a. Use extruded aluminum shade roller tube of a diameter and wall thickness required to support shade fabric without excessive deflection. Roller tubes less than 1.55 inch (39.37 mm) in diameter for manual shades, and less than 2.55 inches (64.77 mm) for motorize shades are not acceptable.
 - b. Provide for positive mechanical engagement with drive / brake mechanism.
 - c. Provide for positive mechanical attachment of shade band to roller tube; shade band shall be made removable / replaceable with a "snap-on" snap-off" spline mounting, without having to remove shade roller from shade brackets.
 - d. Mounting spline shall not require use of adhesives, adhesive tapes, staples, and/or rivets.
 - e. Any method of attaching shade band to roller tube that requires the use of: adhesive, adhesive tapes, staples, and/or rivets are not acceptable.

2.5 SHADE FABRICATION

- A. Fabricate units to completely fill existing openings from head to sill and jamb-to-jamb, unless specifically indicated otherwise.
- B. Fabricate shadecloth to hang flat without buckling or distortion. Fabricate with heat-sealed trimmed edges to hang straight without curling or raveling. Fabricate unguided shadecloth to roll true and straight without shifting sideways more than 1/8 inch (3.18 mm) in either direction per 8 feet (2438 mm) of shade height due to warp distortion or weave design. Fabricate hem as follows:
 1. Bottom hem weights.
 2. Concealed hemtube.
- C. Provide battens in standard shades as required to assure proper tracking and uniform rolling of the shadebands. Contractor shall be responsible for assuring the width-to-height (W:H) ratios shall not exceed manufacturer's standards or, in absence of such standards, shall be responsible for establishing appropriate standards to assure proper tracking and rolling of the shadecloth within specified standards. Battens shall be roll-formed stainless steel or tempered steel, as required.
- D. For railroaded shadebands, provide seams in railroaded multi-width shadebands as required to meet size requirements and in accordance with seam alignment as acceptable to Architect. Seams shall be properly located. Furnish battens in place of plain seams when the width, height, or weight of the shade exceeds manufacturer's standards. In absence of such standards, assure proper use of seams or battens as required to, and assure the proper tracking of the railroaded multi-width shadebands.

- E. Provide battens for railroaded shades when width-to-height (W:H) ratios meet or exceed manufacturer's standards. In absence of manufacturer's standards, be responsible for proper use and placement of battens to assure proper tracking and roll of shadebands.
- F. Blackout shadebands, when used in side channels, shall have horizontally mounted, roll-formed stainless steel or tempered-steel battens not more than 3 feet (115 mm) on center extending fully into the side channels. Battens shall be concealed in a integrally-colored fabric to match the inside and outside colors of the shadeband, in accordance with manufacturer's published standards for spacing and requirements.
 - 1. Battens shall be roll formed of stainless steel or tempered steel and concave to match the contour of the roller tube.
 - 2. Batten pockets shall be self-colored fabric front and back RF welded into the shadecloth. A self-color opaque liner shall be provided front and back to eliminate any see through of the batten pocket that shall not exceed 1-1/2 inches (38.1 mm) high and be totally opaque. A see-through moiré effect, which occurs with multiple layers of transparent fabrics, shall not be acceptable.

2.6 COMPONENTS

- A. Access and Material Requirements:
 - 1. Provide shade hardware allowing for the removal of shade roller tube from brackets without removing hardware from opening and without requiring end or center supports to be removed.
 - 2. Provide shade hardware that allows for removal and re-mounting of the shade bands without having to remove the shade tube, drive or operating support brackets.
 - 3. Use only Delrin engineered plastics by DuPont for all plastic components of shade hardware. Styrene based plastics, and /or polyester, or reinforced polyester will not be acceptable.
- B. Motorized Shade Hardware and Shade Brackets:
 - 1. Provide shade hardware constructed of minimum 1/8-inch (3.18 mm) thick plated steel, or heavier, thicker, as required to support 150 percent of the full weight of each shade.
 - 2. Provide shade hardware system that allows for field adjustment of motor or replacement of any operable hardware component without requiring removal of brackets, regardless of mounting position (inside, or outside mount).
 - 3. Provide shade hardware system that allows for operation of multiple shade bands offset by a maximum of 8-45 degrees from the motor axis between shade bands (4-22.5 degrees) on each side of the radial line, by a single shade motor (multi-banded shade, subject to manufacturer's design criteria).
 - 4. Provide brackets with catch pins for shades with the following mounting conditions: top of shade mounted 25'0" or more above finished floor or/and bottom of shade is 15'0" above finished floor.
 - a. Provide shade hardware constructed of minimum 10GA (0.1345") thick plated steel, or heavier, thicker, as required to support 150 percent of the full weight of each shade. Plastic components without use of steel angle

construction do not meet the intent of this specification and shall not be accepted.

- b. Provide minimum rate of withstand loads of 250 Lb to system with two to four pins.

C. Manual Operated Chain Drive Hardware and Brackets:

1. Provide for universal, regular and offset drive capacity, allowing drive chain to fall at front, rear or non-offset for all shade drive end brackets. Universal offset shall be adjustable for future change.
2. Provide hardware capable for installation of a removable fascia, for both regular and/or reverse roll, which shall be installed without exposed fastening devices of any kind.
3. Provide shade hardware system that allows for removable regular and/or reverse roll fascias to be mounted continuously across two or more shade bands without requiring exposed fasteners of any kind.
4. Provide shade hardware system that allows for operation of multiple shade bands (multi-banded shades) by a single chain operator, subject to manufacturer's design criteria. Connectors shall be offset to assure alignment from the first to the last shade band.
5. Provide shade hardware system that allows multi-banded manually operated shades to be capable of smooth operation when the axis is offset a maximum of 6 degrees on each side of the plane perpendicular to the radial line of the curve, for a 12 degrees total offset.
6. Provide positive mechanical engagement of drive mechanism to shade roller tube. Friction fit connectors for drive mechanism connection to shade roller tube are not acceptable
7. Provide shade hardware constructed of minimum 1/8-inch (3.18 mm) thick plated steel or heavier as required to support 150 percent of the full weight of each shade.
8. Drive Bracket / Brake Assembly:
 - a. MechoShade Drive Bracket model M5 shall be fully integrated with all MechoShade accessories, including, but not limited to: SnapLoc fascia, room darkening side / sill channels, center supports and connectors for multi-banded shades.
 - b. M5 drive sprocket and brake assembly shall rotate and be supported on a welded 3/8 inch (9.525 mm) steel pin.
 - c. The brake shall be an over -running clutch design which disengages to 90 percent during the raising and lowering of a shade. The brake shall withstand a pull force of 50 lbs. (22 kg) in the stopped position.
 - d. The braking mechanism shall be applied to an oil-impregnated hub on to which the brake system is mounted. The oil impregnated hub design includes an articulated brake assembly, which assures a smooth, non-jerky operation in raising and lowering the shades. The assembly shall be permanently lubricated. Products that require externally applied lubrication and or not permanently lubricated are not acceptable.

- e. The entire M5 assembly shall be fully mounted on the steel support bracket, and fully independent of the shade tube assembly, which may be removed and reinstalled without effecting the roller shade limit adjustments.
- D. Drive Chain: #10 qualified stainless steel chain rated to 90 lb. (41 kg) minimum breaking strength. Nickel plate chain shall not be accepted.

2.7 MOTOR AND MOTOR CONTROL SYSTEMS

INTELLIGENT ENCODED SHADE MOTOR DRIVE SYSTEM

- A. Shade Motors:
1. Quiet [44 – 46 db] Intelligent Encoded Motor and Control System: Tubular, asynchronous (non-synchronous) motors, with built-in reversible capacitor operating at 110v AC (60hz), (230v/50 hz AC) single phase, temperature Class A, thermally protected, totally enclosed, maintenance free with line voltage power supply equipped with locking disconnect plug assembly furnished with each motor.
 2. Conceal motors inside shade roller tube.
 3. Maximum current draw for each shade motor of 2.3 amps @ 110 V (.9 amps @230 V AC).
 4. Use motors rated at the same nominal speed for all shades in the same room.
- B. Total hanging weight of shade band shall not exceed 80 percent of the rated lifting capacity of the shade motor and tube assembly. Spring assisted lift systems shall not be accepted.
- C. Quiet Intelligent Encoded Motor System (software, two-way communication): Specifications and design are based on the Intelligent Motor Control System / WhisperShade-IQ™ Motor System) as manufactured by MechoShade. Other systems may be acceptable providing all of the following performance capabilities are provided. Motor control systems not in complete compliance with these performance criteria shall not be accepted as equal systems.
1. Quiet operation of up to 46dBa within 3' feet, open air.
 2. Upper and lower stopping points (operating limits) of shade bands shall be programmed into motors via a hand held removable program module / configurator.
 3. Intermediate stopping positions for shades shall allow for up to three (3) repeatable and precise aligned positions.
 4. Up to 103 available alignment points including 3-user programmable predefined intermediate positions, for a total of 5-defined and aligned positions. All shades on the same switch circuit with the same opening height shall align at each intermediate stopping position.
 5. Two inherent methods of control:
 - a. Cost effective, low voltage, hardwired dry-contact for local switch or 3rd party control operation.
 - b. Expandable to 2-way communication network with IQ/485-NI to support whole building low-voltage control and integration.
 6. Alternate: Mecho-RF™ via Zigby™ wireless mesh, network communication available to reduce low voltage wiring and field labor associated costs.

7. Uniform or Regular Modes of Operation:
 - a. Uniform mode shall allow for shades to only move to intermediate stop positions.
 - b. Regular mode shall allow for shades to move to both intermediate stop positions, plus any position desired between the upper and lower limits as set by the installer.
8. Wall Switches:
 - a. IQ-Switch: in 5 or 10 button, single gang, low voltage.
9. Expandable IQ-485-NI: Available when addressability of each motor or group of motors are required to be on a two-way addressable communication network for whole building or overlapping multi-level control. System Features include:
 - a. 5 @ IQ, Local or Master ports
 - b. 1 @ Photocell input for automated control of shades
 - c. 1 @ IR Eye Input for wireless remote control of shades
 - d. Software Addressable IQ Ports support Multi-Level control with 8 addresses per port
 - e. IQ-485 MS Bus, 485 shall allow up to 65000 addresses controlling up to 500,000 motors per network
 - f. Shall allow for variety of switch and other user interface options including RF and Ethernet (IP)
 - g. Shall support 3rd party control integration via RS232 and Ethernet (IP)

2.8 ACCESSORIES

- A. Roller Shade Pocket for recessed mounting in acoustical tile, or drywall ceilings as indicated on the Drawings
 1. Provide either extruded aluminum and or formed steel shade pocket, sized to accommodate roller shades, with exposed extruded aluminum closure mount, tile support and removable closure panel to provide access to shades.
- B. Fascia:
 1. Continuous removable extruded aluminum fascia that attaches to shade mounting brackets without the use of adhesives, magnetic strips, or exposed fasteners.
 2. Fascia shall be able to be installed across two or more shade bands in one piece.
 3. Fascia shall fully conceal brackets, shade roller and fabric on the tube.
 4. Provide bracket / fascia end caps where mounting conditions expose outside of roller shade brackets.
 5. Notching of Fascia for manual chain shall not be acceptable.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install roller shades level, plumb, square, and true according to manufacturer's written instructions, and located so shade band is not closer than 2 inches (50 mm) to interior face of glass. Allow proper clearances for window operation hardware.
- B. Coordinate the following with the roller shade installer/dealer:
 - 1. Main Contractor shall provide power panels and circuits of sufficient size to accommodate roller shade manufacturer's requirements, as indicated on the mechanical and electrical drawings.
 - 2. Main Contractor shall coordinate with requirements of roller shade installer/dealer, before inaccessible areas are constructed.
 - 3. Electrician shall run line voltage as dedicated home runs (of sufficient quantity, in sufficient capacity as required) terminating in junction boxes in locations designated by roller shade dealer. Electrician shall run low voltage as required.
 - 4. Roller shade installer/dealer shall provide and run all line voltage (from the terminating points) to the motor controllers, wire all roller shade motors to the motor controllers, and provide and run low voltage control wiring from motor controllers to switch/control locations designated by the Architect. All above-ceiling and concealed wiring shall be plenum-rated, or installed in conduit, as required by the electrical code having jurisdiction.
 - 5. Main Contractor shall provide conduit with pull wire in all areas, which might not be accessible to roller shade contractor due to building design, equipment location or schedule.
- C. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.
- D. Clean roller shade surfaces after installation, according to manufacturer's written instructions.
- E. Engage Installer to train Owner's maintenance personnel to adjust, operate and maintain roller shade systems.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 12 9313 - BIKE RACKS

PART 1 -GENERAL

1.1 SUMMARY

- A. This section includes specifications for the Helix Bike Rack.
 - 1. Bikes parked per unit: 6
 - 2. Provide two (1) units for a total of 6 Bikes.

1.2 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed installation of bicycle racks similar in material, design, and extent to that indicated for this project and whose work has resulted in construction with a record of successful in-service performance.
- B. Manufacturer Qualifications: A firm experienced in manufacturing bicycle racks similar to those required for this project and with a record of successful in-service performance.
- C. Source Limitations: Obtain each color, finish, shape and type of bicycle rack from a single source with resources to provide components of consistent quality in appearance and physical properties.
- D. Product Options: Drawings indicate size, shape and dimensional requirements of bicycle racks and are based on the specific system indicated.

1.3 SUBMITTALS

- A. Product Data: Include physical characteristics such as shape, dimensions, bicycle parking capacity and finish for each bicycle rack.
- B. Shop Drawings: Show installation details for each bicycle rack.
- C. Samples for Verification: Submit finish samples for review and verification.
- D. Maintenance Data: For each bicycle rack.
 - 1. Include recommended methods for repairing damage to the finish.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Upon delivery, before signing for shipment, inspect for any damages and notate on the B.O.L.
- B. Store bicycle racks in original undamaged packages and containers until ready for installation. Handle bicycle racks with sufficient care to prevent any scratches or damage to the finish.

PART 2 -PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Basis-of Design Product:
 - 1. Provide bicycle racks manufactured by DERO BIKE RACK CO., 2657 32nd Avenue S, Minneapolis, MN 55406, 1-888-337-6729. Fax: 612-331-2731 Website: www.dero.com
 - 2. American Bicycle Security Company 1-800-245-3723

2.2 MATERIALS

- A. Helix: 1.5" OD 11 gauge tube.

2.3 FINISHES

- A. A hot-dipped galvanized finish performed after fabrication is standard.

2.4 HELIX BIKE RACK

A. Space Use

1. Bikes are locked perpendicular to the Helix as shown in the diagram. With bikes locked to it, the Helix will use approximately the amount of space listed in the installation diagrams.
2. To ensure that the Helix is convenient and safe for bicyclists, use these minimum space use configurations when installing next to a wall or street, or if several Helixes are placed next to each other.
3. Because the Helix is a double-sided rack, placing it lengthwise against a wall without allowing adequate space will limit bike parking to one side of the rack, diminishing capacity. For best results, place Helix perpendicular to the wall to allow access to both sides of the rack.

B. Setbacks

1. Wall Setback: A minimum of 74" should be left between the wall and the long side of the rack. If placing the Helix perpendicular to the wall 12"-24" is the recommended setback.
2. Distance Between Racks: Helix ends can be placed together to look like a continuous spiral. Helixes placed parallel with each other should allow for 13' between each rack.
3. Street Setback: 74" is the minimum setback distance between the street and the rack. 36" is recommended.

PART 3 -EXECUTION

3.1 INSTALLATION

- A. Installation Method: Flange mount - 4 anchors.
- B. In-ground mount available upon special order.
- C. It is the responsibility of the installer to ensure that all base materials into which the rack will be installed can support the rack and will not be damaged by any required installation procedures.

END OF SECTION 12 9313