

MESA HEIGHTS TEACHERAGE SUBDIVISION – PHASE I

CENTRAL CONSOLIDATED SCHOOL DISTRICT

School Board & Superintendent:

Gary J. Montoya	President
Suzette Jean Haskie	Vice-President
Christina J. Aspaas	Secretary
Charlie T. Jones, Jr	Member
Sheldon Pickering	Member
Daniel P. Benavidez	Superintendent

Architect:



Greer Stafford/SJCF ARCHITECTURE, Inc

1717 Louisiana Blvd. NE, Suite 205 505.821.0235
Albuquerque, NM 87110-7027 Fax 505.821.0348

3005 Northridge Blvd. Suite F 505.325.7475
Farmington, NM 87402-2085 Fax 505.325.6464

Date: November 06, 2020
Project No.: 5417.02
PSFA Project No.: O20-003 Central
CCSD Project No.: 2020-841-110

**MESA HEIGHTS TEACHERAGE
SUBDIVISION – PHASE I**

**CENTRAL CONSOLIDATED SCHOOL
DISTRICT**



CONSULTANT CERTIFICATION

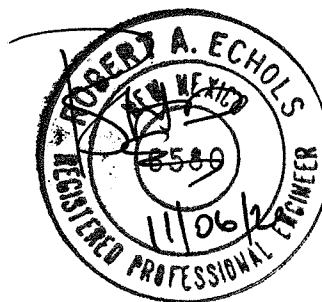
The Construction Specifications listed below for the **Mesa Heights Teacherage Subdivision – Phase I project at Central Consolidated School District** were prepared by:

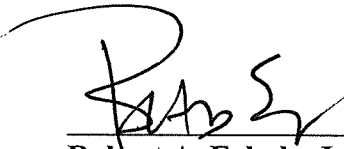
Cheney-Walters-Echols, Inc.

909 W. Apache St.
Farmington, NM 87401
505-327-3303

22 1113 – FACILITY WATER DISTRIBUTION PIPING
31 0513 - SOILS FOR EARTHWORK
31 1000 - SITE CLEARING
31 2001 - SOIL STERILIZATION
31 2002 - SUBGRADE PREPARATION
31 2333 – TRENCHING AND BACKFILLING
32 1216 – ASPHALT PAVING
32 1313 – CONCRETE PAVING
32 3113 – CHAIN LINK FENCING AND GATES
32 3223 - CONCRETE SEGMENTAL RETAINING WALL SYSTEM
33 4100 - STORM UTILITY DRAINAGE PIPING

The technical material and data contained in the specifications were prepared under the supervision and direction of Robert A. Echols, Jr., PE whose seal as a Professional licensed to practice in the state of New Mexico is affixed below.




Robert A. Echols, Jr., PE
New Mexico License No. 6580

11/06/20
Date

All questions about the meaning of intent of these specifications shall be submitted only to the Design Professional stated above, IN WRITING for interpretations.

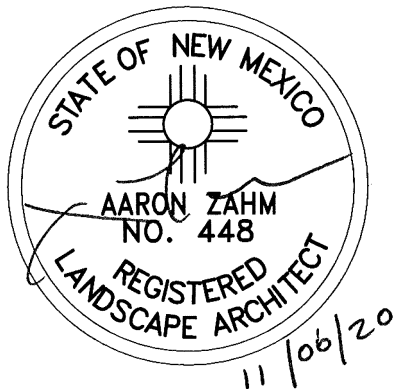
CONSULTANT CERTIFICATION

The Construction Specifications listed below for the **Mesa Heights Teacherage Subdivision – Phase I project at Central Consolidated School District** were prepared by:

MRWM Landscape Architects
1102 Mountain Rd NW, Suite #201
Albuquerque, NM 87102
(505)268-2266 or Fax (505)265-9637

SECTION 32 9300 - PLANTS

The technical material and data contained in the specifications were prepared under the supervision and direction of Aaron Zahm whose seal as a Professional licensed to practice in the state of New Mexico is affixed below.



Aaron Zahm
New Mexico Landscape Architect License #448

11/06/2020

Date

All questions about the meaning of intent of these specifications shall be submitted only to the Design Professional stated above, IN WRITING for interpretations.

CONSULTANT CERTIFICATION

The Construction Specifications listed below for the **Mesa Heights Teacherage Subdivision – Phase I project at Central Consolidated School District** were prepared by:

Chavez-Grievies Consulting Engineers, Inc.

4700 Lincoln Rd NE
Albuquerque, NM 87109
(505)344-4080

SECTION 03 1000 – CONCRETE FORMING AND ACCESSORIES
SECTION 03 2000 – CONCRETE REINFORCEMENT
SECTION 03 3000 – CAST IN PLACE CONCRETE
SECTION 06 10 00 – ROUGH CARPENTRY
~~SECTION 06 16 00 FL – SHEATHING~~
SECTION 07 2600 – UNDER-SLAB VAPOR RETARDER
SECTION 31 2311 – EARTHWORK FOR BUILDING CONSTRUCTION

The technical material and data contained in the specifications were prepared under the supervision and direction of Chris Romero, P.E., whose seal as a Professional licensed to practice in the state of New Mexico is affixed below.



A handwritten signature in black ink, appearing to read "Chris Romero".

11.04.2020

Chris Romero, P.E.
New Mexico License # 16043

Date

All questions about the meaning of intent of these specifications shall be submitted only to the Design Professional stated above, IN WRITING for interpretations.

CONSULTANT CERTIFICATION

The Construction Specifications listed below for the **Mesa Heights Teacherage Subdivision – Phase I project at Central Consolidated School District** were prepared by:

ME&E Engineering
463 Turner Drive, Suite 104A
Durango, CO 81303
970-385-1570

220500	Common Work Results for Plumbing
220700	Plumbing Insulation
221000	Plumbing Piping and Pumps
223000	Plumbing Equipment
224000	Plumbing Fixtures
230500	Common Work Results for HVAC
230700	HVAC Insulation
231100	Facility Fuel Piping
233000	HVAC Air Distribution
235400	Furnaces-Indoor (with condenser)
330500	Natural Gas Distribution

The technical material and data contained in the specifications were prepared under the supervision and direction of Dustin Sullivan, PE whose seal as a Professional licensed to practice in the state of New Mexico is affixed below.



Dustin Sullivan

11/6/2020

Name

Date

New Mexico License # 15055

All questions about the meaning of intent of these specifications shall be submitted only to the Design Professional stated above, IN WRITING for interpretations.

CONSULTANT CERTIFICATION

The Construction Specifications listed below for the **Mesa Heights Teacherage Subdivision – Phase I project at Central Consolidated School District** were prepared by:

ME&E Engineering
463 Turner Drive, Suite 104A
Durango, CO 81303
970-385-1570

26 05 00	Common Work Results For Electrical
26 05 19	Low-Voltage Electrical Power Conductors and Cables
26 05 26	Grounding and Bonding for Electrical Systems
26 05 29	Hangers and Supports for Electrical Systems
26 05 53	Identification for Electrical Systems
26 24 16	Panelboards
26 27 26	Wiring Devices
26 51 19	LED Lighting Fixtures
26 56 00	Exterior Lighting Supports

The technical material and data contained in the specifications were prepared under the supervision and direction of Sean Brophy, PE whose seal as a Professional licensed to practice in the state of New Mexico is affixed below.



Sean Brophy

11/6/2020

Name

Date

New Mexico License # 26141

All questions about the meaning of intent of these specifications shall be submitted only to the Design Professional stated above, IN WRITING for interpretations.

MESA HEIGHTS TEACHERAGE SUBDIVISION – PHASE I
CENTRAL CONSOLIDATED SCHOOL DISTRICT

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**REQUEST FOR PROPOSAL
FOR
Mesa Heights Teacherage Subdivision – Phase I
Central Consolidated School District**

Ver. 1.6a 2019 Edition

☒ 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: 2020-841-110

PSFA PROJECT NO: 020-003 Central

For Contracting Agency: Central Consolidated School District

Contact Person: Candice Thompson, Director of Operations

Address: 64 Old Shiprock HS Road

City/State/Zip: Shiprock, NM 87420

Telephone: 505-598-4561

E-Mail: thomca@centralschools.org

DEADLINE FOR RECEIPT OF PROPOSALS IS AS FOLLOWS:

DATE: Thursday, February 04, 2021 TIME: 2:00 PM MST

DELIVER TO: Candice Thompson

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 mandatory PRE-PROPOSAL CONFERENCE will be held as follows:

DATE: Tuesday, January 19, 2021 TIME: 1:30 PM MST

LOCATION: Central Consolidated School District

Mini Board Room

64 Old Shiprock HS Road

Shiprock, NM 87420

Pre-proposal conference will also provide a virtual option:

Mesa Teacherage Pre-Proposal

Tue, Jan 19, 2021 1:30 PM - 3:00 PM (MST)

Please join my meeting from your computer, tablet or smartphone.

<https://global.gotomeeting.com/join/432069885>

You can also dial in using your phone.

(For supported devices, tap a one-touch number below to join instantly.)

United States: +1 (408) 650-3123

- One-touch: <tel:+14086503123,,432069885#>

Access Code: 432-069-885

Note: Any unauthorized change to the language or forms issued in this Project Manual or identified in any addenda shall render your proposal 'nonresponsive.'

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Drawings and Specifications

for

Central Consolidated School District

& The

STATE OF NEW MEXICO

PUBLIC SCHOOL FACILITIES AUTHORITY

A. PROJECT DEPOSIT INSTRUCTIONS

Proposal Documents may be obtained at **Albuquerque Reprographics Inc.** upon payment of **\$125.00** for each complete set. CHECKS SHOULD BE MADE PAYABLE TO **Central Consolidated 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: Greer Stafford/SJCF Architecture, Inc.
Albuquerque Office: 1717 Louisiana Blvd NE, Suite 205
Albuquerque, NM 87110 Telephone: 505-821-0235

1. Dodge Reports, 1615 University Boulevard NE, Albuquerque, NM 87102
Telephone: (505) 243-2817
2. Reed Construction Data, 3351 Candelaria, NE, Suite D, Albuquerque, NM 87107
Telephone: (505) 881-8590
3. Builder's News and Plan Room, 3435 Princeton Drive NE, Albuquerque, NM 87107
Telephone: (505) 884-1752
4. Construction Reporter, 4901 McLeod Rd NE, Suite 200 A, Albuquerque, NM 87109
Telephone: (505) 243-9793

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 unit prices, per the Proposal Form (Section 00 41 13). A proposal must be submitted on all proposal items; 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 73 00). 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. Section 00 43 34 – SUBCONTRACTOR QUALIFICATIONS QUESTIONNAIRE

And

Section 00 43 36 – COMBINED LIST OF SUBCONTRACTOR AND ANTI-TRUST CLAIMS:

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 Section 00 43 34 form.

NOTE: The District may 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. STANDARD SUBCONTRACTOR LISTING FORM AND BONDING:

Completed form in Section 00 43 36, 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 **60 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 <https://www.nmpsfa.org/wordpress/contracting-and-procurement-services/>, 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 1.4.1.1.46, 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 **Mesa Heights Teacherage Subdivision – Phase I** 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:

\$2,300,000.00

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

C. PROJECT DESCRIPTION

The project is described as:

Base Bid:

Site work including grading and drainage, roads, and utilities extension to support phase I construction of up to nine (9) single-family homes. Landscaping for each of nine (9) homes. Utilities extension sized for eventual construction of thirty-three (33) home subdivision.

Unit Price A:

Construction of each 3-Bedroom single family home on site prepared in base bid.

Unit Price B:

Construction of each 2-Bedroom single family home on site prepared in base bid.

Unit Price C:

Construction of each 2-Bedroom (mirrored) single family home on site prepared in base bid.

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: Candice Thompson
Address: 64 Old Shiprock HS Road
City/State/Zip: Shiprock, NM 87420
Phone Number: 505-598-4561
E-Mail: thomca@centralschools.org

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

District Design Professional: Greer Stafford/SJCF Architecture, Inc.
Design Professional Contact Name: Chris van Dyck
Address: 1717 Louisiana Blvd NE, Suite 205
City/State/Zip: Albuquerque, NM 87110
Phone Number: 505-821-0235
Email: cvandyck@greer-stafford.com

E. PROJECT PLANNING SCHEDULE

Key project planning schedule milestones are:

Tentative Notice of Intent to Award	February 15, 2021
Tentative Notice of Award	February 17, 2021
Anticipated Substantial Completion	November 2021

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 Contractor” or “Resident Veteran” means an entity that has a valid resident certificate issued by the NM Taxation and Revenue Department pursuant to Section 13-1-22 NMSA 1978.

“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

The Procurement Manager has established a Procurement Library. Offerors are encouraged to review the material contained in the Procurement Library by accessing the documents available on line. The documents are located on the NM State Purchasing Division and PSFA websites as follows:

State Procurement Code - NMSA 1978 Chapter 13 Public Purchases and Property - Article 1 Procurement

Procurement Regulations, 1.4.1.1 NMAC

A copy may be obtained from the following website:

<https://www.generalservices.state.nm.us/uploads/files/SPD/User%20Guides/1%204%201%20NMAC.pdf>

**RFP for Construction, Maintenance Services and Repairs, 1.4.8 NMAC
Chapter 10, Article 16 NMSA 1978 "Governmental Conduct Act".**

- **Guidelines to the New Mexico Public School Adequacy Standards, etc.**

- NMAC 6.27.30 Statewide Adequacy Standards <http://www.nmpsfa.org/?q=node/115>
- NMAC Rules – Public School Capital Outlay Council
- The State of New Mexico PSFA HVAC and Controls Performance Assurance Program incorporating all appendices.

http://www.nmpsfa.org/legacy/pdf/Contracts_3.0/General/NM_PSFA_PAC_Manual_Rev_11-01-2013.pdf

- Public School Capital Outlay Council Awards

Copies may be obtained from the following website: www.nmpsfa.org

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
1.	Issue RFP	District	01/11/21
2.	<p>Pre-Proposal Conference Location: CCSD Mini Board Room Virtual option will be offered</p> <p>Mesa Teacherage Pre-Proposal Tue, Jan 19, 2021 1:30 PM - 3:00 PM (MST)</p> <p>Please join my meeting from your computer, tablet or smartphone.</p> <p>https://global.gotomeeting.com/join/432069885</p> <p>You can also dial in using your phone. (For supported devices, tap a one-touch number below to join instantly.)</p> <p>United States: +1 (408) 650-3123 - One-touch: tel:+14086503123,432069885 Access Code: 432-069-885</p> <p>Note: Mandatory</p>	<p>District</p> <p>Time: 1:30 pm local time</p>	01/19/21
3.	<p>Intent to Respond to RFP Note: Mandatory See Attachment D</p>	Potential Offerors	01/19/21
4.	Deadline to Submit Written Questions re: RFP Process	Potential Offerors	01/28/21
5.	Response to Written Questions re: RFP Process and Addendum	District/Design Professional	01/29/21
6.	Date of Release of Last Addenda Prior to Submission of Proposal	Design Professional	01/29/21
7.	Submission of Proposal	Offerors Time: 2:00 pm local time	02/04/21
7A.	Submission of Copies of Subcontractor Qualification Statements	Offerors Time: 2:00 pm local time	02/05/21
8.	Proposal Evaluation	Evaluation Committee	02/08/21
9.	Notice of Short Listed Offerors	Procurement Manager	02/09/21
10.	Interviews of Short-listed Offerors (If held)	Evaluation Committee & Offerors	TBD
11.	Issue Recommendation of Award to Governing Board/Notice of Intent to Award	Procurement Manager & Design Professional	02/15/21
12.	Contract Negotiations	District	02/16/21
13.	Issue Notice of Award, Prepare Contract	Design Professional & District	02/17/21
14.	Protest of Award Deadline	Offeror(s)	03/04/21

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. Intent to Respond to RFP

Potential Offerors may be required, based on the selection contained in the paragraph, to provide written notice "Intent to Propose to RFP" (Attachment B) in order to have their organization placed on the procurement distribution list. The notice shall be signed by an authorized representative of the organization, dated, and returned by close of business by the date shown on the table above to the Procurement Manager.

4. 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.

5. 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.

6. 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.

7. 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 of the proposals. The witness and Procurement Manager shall sign the “List of Offerors” for the procurement file.

7A. Submission of copies of Technical Proposals – if applicable

If the Procurement Manager so designates, this is the date and time that Offerors may submit **copies** of the Subcontractor Qualifications Statements for distribution to the Evaluation Committee so that an Offeror submission is not jeopardized due to the volume of copies that must be made. Note: The General Contractor must include one (1) copy of each Subcontractor Qualifications Statement per the 00 43 34 Subcontractor Qualifications Statement Listing Form and the 00 43 36 Subcontractor Listing Form in the technical proposal that is being submitted on Item 6, Schedule of Events.

8. 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.

9. 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.

10. 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.

11. 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.

12. 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.

13. 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.

14. 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 – No Electronic Media Allowed

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. The District may allow the copies of the Subcontractor Qualifications Statements to be submitted at a later time to ensure timely delivery of the proposal response.

Note: Offerors may be afforded 24 hours to submit the additional copies of the Subcontractors Qualifications Statements. Please do not submit any portion of your RFP in electronic media.

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 43 34 - Subcontractor Qualifications Questionnaire

00 43 36 – Combined List of Subcontractor and Assignment of Anti-Trust Claims (form w/ Registration Number and signatures - before contract is signed)

Resident Contractor Preference Certificate

OR

Resident Veteran Preference 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 contractor or 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, Para. 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 housing subdivision projects of similar complexity or more since the year 2010 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 on Attachment A Form provided

- a. Experience on Similar projects since 2010
- 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

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 similar housing subdivision projects since 2010.
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 on Subcontractor Attachment A Form provided

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

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, AND 6:

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, and 6 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 Division 00 of the Project Manual)

1. **PRICE PROPOSAL AMOUNT**— use the Lump Sum Proposal form (Section 00 43 13) 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 AFFIDAVIT**
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 publicly 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 resident/veteran contractor preference 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

Pursuant to Section 13-1-22 NMSA 1978, a resident contractor or Veteran Contractor who holds a valid certificate issued by the NM Taxation and Revenue Department shall be awarded the certified percentage (5% for resident contractors, 10% for Veteran Contractors) of

the total possible points assigned to the procurement. When a joint proposal is submitted by both a resident and nonresident contractor, the resident preference shall be reduced in proportion to the percentage of the contract, based on the dollar amount of the services to be provided that will be performed by a nonresident business.

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 00 43 34 - Subcontractor Qualifications Questionnaire 00 43 36 – Combined List of Subcontractor and Assignment of Anti-Trust Claims Resident OR Veteran Contractor Preference Certificate Campaign Contribution Disclosure Form	Mandatory
TAB 2A	GENERAL CONTRACTOR QUALIFICATIONS STATEMENT	15 POINTS
	a. Experience completing similar projects	4 Points
	b. Written Safety Program Compliant, Provide 1 copy	2 Points
	c. List of key safety personnel/safety manager for this project	2 Points
	d. Modification rate for past 5 years	3 Points
	e. Recordable incident rate for past calendar year OSHA 300 Log	2 Points
	f. Free of committing serious/willful violation of Federal/State safety laws	2 Points
TAB 2B	SUBCONTRACTOR QUALIFICATIONS STATEMENT	15 POINTS
	a. Experience completing similar projects	4 Points
	b. Written Safety Program Compliant; Provide 1 copy	3 Points
	c. Modification Rate past 5 Years	3 Points
	d. Recordable Incident Rate for past calendar year OSHA 300 log	3 Points
	e. Free of committing serious/willful violations of Federal/State safety laws	2 Points
TAB 3	PAST PERFORMANCE	15 POINTS
	a. Budget & Schedule Data (See III Response Format, Technical Proposal, Tab 3, questions 1-8)	4 Points
	b. Performance quality and overall customer satisfaction if available	4 Points
	c. Compliance with Applicable Laws & Regulations	3 Points
	d. Safety Performance Record	4 Points
TAB 4	MANAGEMENT PLAN	20 POINTS
	a. Reliable Staffing Sources/Project Staffing	3 Points
	b. Management Team/Selection of Subcontractors	3 Points
	c. Organization construction tasks/security/safety/staging areas	3 Points
	d. Technical approach to meet costs/schedule/quality	4 Points
	e. Project Schedule/critical dates	3 Points
	f. Project plan for completion on time	4 Points
TAB 5	PROJECT STAFFING/CRAFT LABOR CAPABILITIES	10 POINTS
	a. Management Team resumes, experience	3 Points
	b. Team members experience in this project team role	3 Points
	c. Proposed team prior working relationships on other projects	1 Points

- | | |
|---|----------|
| d. GC and proposed subcontractor skill training | 1 Point |
| e. Project Schedule | 2 Points |

TAB 6 HEALTH AND SAFETY	5 POINTS
--------------------------------	-----------------

- | | |
|--|---------|
| a. Summary description of Health & Safety Plan | 1 Point |
| b. One Full Copy of Written Safety Plan | 1 Point |
| c. Competent Person Responsible/Capable of Implementing | 1 Point |
| d. Project Specific Health/Safety Risks | 1 Point |
| e. Describe processes to clearly communicate Health/Safety risks | 1 Point |

TAB 7 OTHER/VALUE ADDED CRITERIA	up to 20 POINTS
---	------------------------

(Choose one)

- | | |
|---|-----------|
| a. NM produced work All listed subcontractors are NM firms <i>or</i> | 20 Points |
| b. All except one listed subcontractors are NM firms <i>or</i> | 15 Points |
| c. All except two of the listed subcontractors are NM firms <i>or</i> | 10 Points |
| d. All except three or more of the listed subcontractors are NM firms | 5 Points |

VOLUME 2 – PRICE PROPOSAL

PRICE PROPOSAL FORM (Amount stated to be translated to points)	100 POINTS
---	-------------------

TOTAL POINTS	200 POINTS
---------------------	-------------------

INTERVIEWS, If Held	100 POINTS
----------------------------	-------------------

GRAND TOTAL	300 POINTS
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RFP ATTACHMENT A.

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 as 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) _____

RFP ATTACHMENT B.

INTENT TO RESPOND TO RFP FORM

MANDATORY

REQUEST FOR PROPOSALS

TITLE: Mesa Heights Teacherage Subdivision - RFP # 2020-841-110

In acknowledgement of receipt of this Request for Proposal the undersigned agrees that he/she has received a complete copy, beginning with the title page and table of contents, and ending with Attachment B.

This acknowledgement of receipt shall be signed and returned to the Procurement Manager no later than close of business on January 19, 2021. The close of business is 5:00 PM local time. Failure to return this form with the intention of submitting a proposal will jeopardize the receipt Offeror written questions and the District's written responses to those questions as well as RFP amendments if any are issued.

FIRM: _____

REPRESENTED BY: _____

TITLE: _____ **PHONE No. :** (____) _____

E-MAIL: _____ **FAX NO.:** _____

ADDRESS: _____

CITY: _____ **STATE:** _____ **ZIP CODE:** _____

SIGNATURE: _____ **DATE:** _____

ALTERNATE CONTACT INFO

NAME: _____ **E-MAIL:** _____

PHONE No. : (____) _____

This name and address will be used for all correspondence related to the Request for Proposals.

Place an "X" on the appropriate statement below:

___ Firm **DOES INTEND** to respond to this Request for Proposals.

___ Firm **DOES NOT INTEND** to respond to this Request for Proposals.

Procurement Manager:

Name: Candice Thompson
Title: Director of Operations
District Name: Central Consolidated School District
Address: 64 Old Shiprock HS Road, Shiprock, NM 87420
Telephone: 505-598-4561
E-Mail: THOMCA@CENTRALSCHOOLS.ORG

CENTRAL CONSOLIDATED SCHOOL DISTRICT

MESA HEIGHTS TEACHERAGE SUBDIVISION–PHASE I – RFP NO. 2020-841-110

REQUEST FOR PROPOSAL FOR CONSTRUCTION

*For the convenience of the contractors, an electronic version of this RFP may be issued for your use. Any changes to the document's questions or language that differs from the wording as issued in the RFP dated **NOVEMBER 06, 2020** other than to fill in answers for the questions asked, will constitute a non-responsible proposal.*

STATEMENT OF QUALIFICATIONS FOR GENERAL CONTRACTORS

Project Name: _____

1. OFFEROR INFORMATION

Name: _____

Address: _____

Principal Office: _____

() Corporation () Partnership () Sole Proprietorship () Joint Venture

() Other _____

a. How many years has your organization been in business as a Contractor? _____

b. How many years has your organization been in business under its present business name?

c. Under what other or former names has your organization operated?

2. LICENSING

a. Name of license holder (or qualifying party) exactly as on file with the State of New Mexico Construction Industries Division:

b. License Classification: _____ License Code: _____

c. License Number: _____

d. Issue Date: _____ Expiration Date: _____

e. Is the firm's contractor's license free of ever being suspended or revoked by the CID or by the appropriate licensing agency in any other state?

() Yes, free of suspension or revocation () No IF no, attach explanation.

f. Does your firm hold all applicable Business licenses required by State of New Mexico?

License Number: _____ Jurisdiction: _____

Fill in name of license holder, exactly as it appears on file with jurisdictional authorities:

(Name)

Issue Date: _____ Expiration Date: _____

License Number: _____ Jurisdiction: _____

Fill in name of license holder, exactly as it appears on file with jurisdictional authorities:

(Name)

Issue Date: _____ Expiration Date: _____

License Number: _____ Jurisdiction: _____

Fill in name of license holder, exactly as it appears on file with jurisdictional authorities:

(Name)

Issue Date: _____ Expiration Date: _____

g. Is your firm free from formal debarment from public works, federal, state or local public works jurisdictions?

() Yes () No (Attach explanation)

3. EXPERIENCE

- a. Has your firm completed three (3) or more educational facility, addition and/or renovation project(s) of similar complexity, as the proposed project? Complete **Attachment A** for five (5) maximum projects listed:

☐ Yes Number of Projects: _____ ☐ No

Project 1 Name: _____

Project 2 Name: _____

Project 3 Name: _____

Project 4 Name: _____

Project 5 Name: _____

- b. State the average annual amount of construction work performed during the past five years:

\$ _____

- c. Also, on **Attachment A**, list major construction project your organization has in progress, giving the name of the project, owner, architect, contract amount, percent of completion, and scheduled completion date.
- d. List the categories of work that your organization normally performs with its own forces.

4. KEY PERSONNEL EXPERIENCE

Please note that more consideration will be given to those meeting or exceeding the required qualifications below:

- a. Does your assigned Project Manager have the following minimum qualifications and experience? (Attach Resume at **Attachment B**)

(1) At least ten (10) years experience in the construction industry?

☐ Yes Number of Years: _____ ☐ No

(2) Experience on at least one (1) construction type as identified in 3. EXPERIENCE Item a

☐ Yes Number of Projects _____ ☐ No

(3) Experience as a Project Manager on one (1) or more construction projects totaling 10,000 square feet or more?

☐ Yes Number of Projects _____ ☐ No

- b. Does your assigned Project Foreman/Superintendent have the following minimum qualifications and experience? (Attach Resume at **Attachment B**)

(1) At least ten (10) years experience in the construction industry?

☐ Yes Number of Years: _____ ☐ No

(2) Experience on at least one (1) construction type as identified in 3a.?

☐ Yes Number of Projects _____

(3) Experience as a Project Foreman/Superintendent on one (1) or more construction projects totaling 10,000 square feet or more?

☐ Yes Number of Years: _____ ☐ No

- c. Does your Safety Program Manager have the following minimum qualifications and experience? (Attach Resume to **Attachment B**)

(1) At least five (5) years experience in a safety management role?

☐ Yes Number of Years: _____ ☐ No

(2) Experience on at least one (1) construction type as identified in 3a.?

☐ Yes Number of Projects _____ ☐ No

- d. Does your Quality Assurance/Quality Control (QA/QC) Manager have the following minimum qualifications and experience? (Attach Resume to **Attachment B**)

(1) At least five (5) years experience in a safety management role?

☐ Yes Number of Years: _____ ☐ No

(2) Experience on at least one (1) construction type as identified in 3a.?

☐ Yes Number of Projects _____ ☐ No
Years with your firm: _____

Present Position/Job Title: _____ Years in position: _____

List other project(s) this person has had a similar role for the past five (5) years:

Is your QA/QC a Principal or Officer of the firm?

☐ Yes ☐ No

- e. Please include an Organizational Chart (**Attachment C**) of the Management Team that will be assigned to this project. Identify relationships, duties and responsibilities and key roles of each individual.

5. CAPACITY AND CAPABILITY TO PERFORM THE WORK

- a. Resources: Total number of current employees: Project Managers _____
Estimators _____
Superintendents _____
Foremen _____
Tradesmen _____
Administration _____
Other _____
- b. Does your firm have the immediate capacity to perform the work required for this project:
() Yes () No
- c. Please list all projects currently under contract totaling over 30,000 square feet with scheduled completion dates (**Attachment D**)
() See Attachment D () None

6. SURETY

- a. Firm's current surety company:

Will this surety be used for the construction contract for this

project? () Yes () No (attach
explanation)

Contact Agent Name: _____ Telephone: _____

Years utilizing this surety: _____ Maximum Capacity: _____

Aggregate Total of current surety in force: _____

- b. Is the surety company to be used on this project licensed to do business in the State of New Mexico?
() Yes () No (attach explanation)
- c. Is your firm free of having any construction contracts taken over by a surety for completion in the past five (5) years?
() Yes () No (attach explanation)

- d. Has your firm used other surety companies since 2010? () Yes (list) () No

Surety Company

Contact

Surety Company

Contact

Surety Company

Contact

- e. Is your firm able to obtain bonding in the amount required for the completion of this project? Provide a notarized declaration from the surety identified above, stating the amount of bonding capacity available to your firm for this project at **Attachment E**.
() Yes () No (attach explanation)

7. **SAFETY**

- a. Does your firm have a written safety program compliant with current State regulations? Provide one (1) copy of your firm's written safety program at **Attachment F**.

() Yes () No (attach explanation)

- b. Provide a list of key safety personnel, including the designated safety manager who will be assigned to this project, and list specific duties.

Name and Title

Specific Duties

Name and Title

Specific Duties

Name and Title	Specific Duties
_____	_____

- c. Provide the experience modification Rate for the past five (5) years:

_____/_____/_____/_____/_____

- d. Provide the Recordable Incident Rate for the past calendar year: _____

- e. Is your firm free of committing serious or willful violations of federal or state safety laws as determined by a final non-appealable decision of a court or government agency?

☐ Yes

☐ No (attach explanation)

8. INSURANCE & CLAIMS HISTORY

- a. Is your firm free of any court judgments, pending litigation, arbitration and final agency decisions filed within the last five (5) years in a construction related matter in which the contractor, or any officer, is or was a party?

☐ Yes

☐ No (attach explanation)

- b. Has your firm during the past five (5) years been free of a determination by a court of competent jurisdiction that is filed a false claim with any federal, state or local government entity?

☐ Yes

☐ No (attach explanation)

- c. Does your firm have the ability to provide the required insurance in the limit stated in the project documents (General Liability and Comprehensive Auto at \$1 Million per occurrence and \$1 Million in the aggregate?

☐ Yes

☐ No (attach explanation)

- d. Please provide a letter from an insurance carrier stating that the firm is able to obtain insurance in the limits stated as Attachment G.

9. QUALITY ASSURANCE – ATTACHMENT H

- a. Does your firm have a written Quality Assurance

Program? () Yes () No

- b. Provide one (1) copy of the written Assurance Program for **Attachment H.**

10. PROJECT SCHEDULING

- a. Does your firm use computerized scheduling? () Yes () No

- b. If YES, which programs and versions are used? Please list:

- c. Has the firm been involved with a construction project within the past five (5) years, where the schedule was not met? () Yes () No

- d. If YES, please indicate the project (refer to **Attachment A**)

i. Project: _____

Reason for Delay: _____

ii. Project: _____

Reason for Delay: _____

iii. Project: _____

Reason for Delay: _____

- e. Has the firm been assessed liquidated damages due to scheduling for any project in the past five (5) years? (Refer to **Attachment A**) ☐ Yes ☐ No

If YES, please list projects

(1) Project: _____ Amount \$ _____

Reason for assessment _____

(2) Project: _____ Amount \$ _____

Reason for assessment _____

(3) Project: _____ Amount \$ _____

Reason for assessment _____

11. **LABOR CODE VIOLATIONS**

- a. Has your firm during the past five (5) years, been free of any determinations by a court or an administrative agency of repeated or willful violations of laws and/or regulations pertaining to the payment of prevailing wages or employment of apprentices of public works projects? Refer to **Attachment I**

☐ Yes ☐ No

- b. Is the firm free of all Subcontractor Fair Practices Act violations for the past five (5) years?

☐ Yes ☐ No (explain)

12. JUDGEMENTS/BREACH OF CONTRACT/ MEDIATIONS AND ARBITRATIONS
Attachment J

- a. List any judgments against the firm during the past 5 years.
Who initiated? What was the outcome?
- b. List any other actions brought against you for breach of contract during the past 5 years.
Who initiated? What was the outcome or current status?
- c. List all mediations/arbitrations in the last 5 years.
Who initiated? What was the outcome?

13. CONTRACTOR COMMENTS/OTHER INFORMATION

- a. Certify 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 pre-listed subcontractors. Refer to **Attachment K** (4 PAGE MAXIMUM)

**THE UNDERSIGNED CERTIFIES THAT ALL OF THE QUALIFICATION
INFORMATION SUBMITTED WITH THIS FORM IS TRUE AND CORRECT.**

Name and Title Firm Name

Signature Address of Firm

E-mail Address City/State/Zip

Telephone Number Fax Number

END OF DOCUMENT

ATTACHMENT A
GENERAL CONTRACTOR'S STATEMENT OF QUALIFICATIONS
REFERENCE: 3.a., b. c., 10.d., 10e. EXPERIENCE

COMPLETE ONE FORM FOR EACH PROJECT LISTED (MAXIMUM 5)

PROJECT DESCRIPTION

Project Type: _____ Contact Name: _____

Project Name: _____ Contact Title: _____

Owner: _____ Contact Phone No.: _____

DESIGN PROFESSIONAL

Name of Firm: _____ Contact Name: _____

Contact Phone No.: _____ Contact Title: _____

Gross Building Area (Sq. Ft.) _____ ☐ New ☐ Addition ☐ Renovation

Project Start Date: _____ Completion Date: _____

Original Contract Amt.: \$ _____ Original No. of Days to Complete: _____

Final Contract Amount
With all Change Orders: \$ _____ Final Contract Days to Complete:
with all Time Extensions: _____

PROJECT EXECUTION

Were Liquidated Damages assessed on this Project? ☐ No ☐ Yes Days ____ \$ _____

Percentage of Work Subcontracted: _____ % Contract Type ☐ Competitive Bid Lump Sum
☐ Negotiated Lump Sum
Major Subcontractors: ☐ Guaranteed Maximum Price
☐ Other (Describe)

Mechanical: _____

Electrical: _____

Concrete: _____

Underground Utilities: _____

CUSTOMER SATISFACTION

How was this measured? ☐ Customer Survey ☐ Attached ☐ Yes ☐ No ☐ Other (Describe)

ATTACHMENT B
GENERAL CONTRACTOR'S STATEMENT OF QUALIFICATIONS

REFERENCE: 4 a., b, c, d
KEY PERSONNEL EXPERIENCE

ATTACH ONE (1) PAGE RESUMES OF THE PROPOSED
PROJECT MANAGER
PROJECT SUPERINTENDENT
SAFETY PROGRAM MANAGER
OTHER KEY PERSONNEL (OPTIONAL)

1. EDUCATION
High School, College, Trade Schools, Trade Seminars, Trade/Management
Specialized Courses, Etc.
2. RELATED EXPERIENCE
Related experience should include the following:
 - a. Position Title
 - b. Duties and Responsibilities
 - c. Major accomplishments
 - d. Number of personnel supervised
3. PROJECT EXPERIENCE
Identify project experience requested in the Statement at 4.a. (2) (3), 4.b. (2) (3),
and 4.c. (2). Include the project Title and Location.
4. Other information that demonstrates the individual's strengths for this project.
5. Project Professionals and Project Owner Reference may be included.

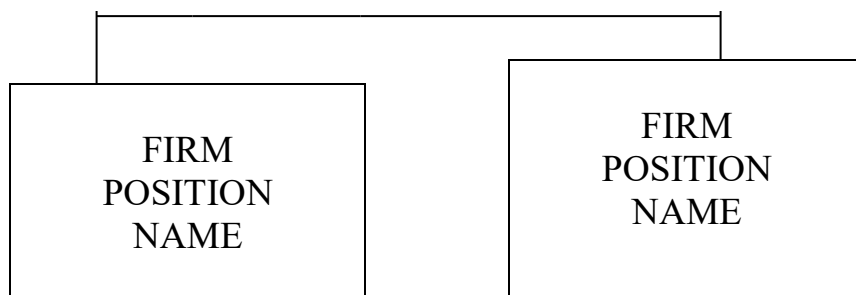
ATTACHMENT C
GENERAL CONTRACTOR'S STATEMENT OF QUALIFICATIONS

REFERENCE: 4.e.
Organizational Chart of Project Management Team

FIRM POSITION NAME

Chart should include the entire
Project Team
Subcontractor Key Personnel

And Supervision



1. Indicate the relationship between PM/Supt. of the Subcontractors and the General contractor's PM/SUPT.
2. Indicate the relationship of the Safety Manager of the Subcontractors and General Contractor, and the relationship of the Safety Manager with others on the job site.
3. Indicate the relationship between the QA/QC Manager with other personnel on the job site.

ATTACHMENT D
GENERAL CONTRACTOR’S STATEMENT OF QUALIFICATIONS

REFERENCE: 5.c.
List of all project currently under contract totaling square feet stated in 5.c.
with scheduled completion dates

<u>PROJECT TITLE AND LOCATION</u>	<u>START DATE</u>	<u>PROJECTED COMPLETION</u>

ATTACHMENT E
GENERAL CONTRACTOR’S STATEMENT OF QUALIFICATIONS

REFERENCE: 6.d.
Notarized Declaration of Surety

DOCUMENTATION FROM SURETY

ATTACHMENT F
GENERAL CONTRACTOR'S STATEMENT OF QUALIFICATIONS

REFERENCE: 7.a. SAFETY
Copy of Firm's written Safety Program

SUBMIT ONLY COPIES OF SAFETY PLAN WITH SUBMITTAL PACKET

Include Work Loss Incidents and History

ATTACHMENT G
GENERAL CONTRACTOR'S STATEMENT OF QUALIFICATIONS

REFERENCE: 8.d.
Letter from Insurance Carrier regarding limits of liability

DOCUMENTATION OF INSURABILITY

ATTACHMENT H
GENERAL CONTRACTOR'S STATEMENT OF QUALIFICATIONS

REFERENCE: 9.b.
Written Quality Assurance Program

SUBMIT COPIES WITH SUBMITTAL PACKET

**ATTACHMENT I
GENERAL CONTRACTOR'S STATEMENT OF QUALIFICATIONS**

**REFERENCE: 11.a.
Affidavit of non-violation of Labor Codes**

Name of Firm:

Address:

Project

Reference: (Name of Owner & Project)

Request for Proposal # _____
Affidavit of Non-violation of Labor Codes

To: **The Board of Education
School District**

**The undersigned officer of _____ hereby states that
_____ has, during the past five (5) years, been free
of any determinations by a court or an administrative agency, of repeated or willful violations of
laws and/or regulations pertaining to the payment of prevailing wages or employment of
apprentices of public works projects.**

Name

Title

Signature

NOTARY

State of _____)

County of _____)

Signed or attested before me on _____ by _____

Seal

My Commission Expires: _____

ATTACHMENT J
GENERAL CONTRACTOR’S STATEMENT OF QUALIFICATIONS

REFERENCE: 12.a.b.c.
Judgments/Breach of Contract/Mediations/Arbitrations

- a. List any judgments against the firm during the past 5 years
Who initiated? What was the outcome?
- b. List any other actions brought against you for breach of contract during the past 5 years,
Who initiated? What was the outcome or current status?
- c. List all mediations/arbitrations in the last 5 years,
Who initiated? What was the outcome?

ATTACHMENT K
GENERAL CONTRACTOR’S STATEMENT OF QUALIFICATIONS

REFERENCE: 13.
Contractor Comments/Other Information

Additional written explanations or comments required for clarification of items contained in the Statement of Qualifications.

ITEM	REF. NO:	COMMENTS
<hr/>		

CENTRAL CONSOLIDATED SCHOOL DISTRICT

MESA HEIGHTS TEACHERAGE SUBDIVISION-PHASE I - RFP NO. 2020-841-110

REQUEST FOR PROPOSAL FOR CONSTRUCTION

*For the convenience of the contractors, an electronic version of this RFP may be issued for your use. Any changes to the document's questions or language that differs from the wording as issued in the RFP dated **NOVEMBER 06, 2020** other than to fill in answers for the questions asked, will constitute a non-responsible proposal.*

STATEMENT OF QUALIFICATIONS FOR SUBCONTRACTORS

Project Name: _____

1. OFFEROR INFORMATION

Firm Name: _____

Type of Firm:

() Corporation () Partnership () Sole Proprietorship () Joint Venture

() Other _____

a. Year Firm was established: _____

b. Parent Company (if applicable): _____

c. All former names during the past 10 years your organization has operated?

2. LICENSING

Provide your team's New Mexico contractor's license, which is current and in good standing with the State of New Mexico Construction Industries Division (CID).

a. Name of license holder (or qualifying party) exactly as on file with the State of New Mexico Construction Industries Division:

- b. License Classification: _____ License Code: _____
- c. License Number: _____
- d. Issue Date: _____ Expiration Date: _____
- e. Is the firm's contractor's license free of ever being suspended or revoked by the CID or by the appropriate licensing agency in any other state?
- () Yes, free of suspension or revocation () No IF no, attach explanation.

3. EXPERIENCE

- a. Has your firm completed one (1) or more educational facility, addition and/or renovation project(s) of similar complexity and valued at:
- Mechanical/Plumbing, Electrical, Roofing: sub-contracts valued at \$100,000 since 2010.
 - All remaining: Experience completing one or more facilities over 10,000 square feet since 2010.

- b. Complete **Attachment A** for three (3) maximum projects listed:

() Yes Number of Projects: _____ () No

Project 1 Name: _____

Project 2 Name: _____

Project 3 Name: _____

Provide copies of Performance Evaluation Reports prepared in connection with projects described in Para. 3.a above.

- c. State the average annual amount of construction work performed during the past five years:

\$ _____

- d. Also, on **Attachment A**, list major construction project your organization has in progress, giving the name of the project, owner, architect, contract amount, percent of completion, and scheduled completion date.

4. KEY PERSONNEL EXPERIENCE

Please note that more consideration will be given to those meeting or exceeding the required qualifications below:

- a. Does your assigned Project Manager have the following minimum qualifications and experience? (Attach Resume at **Attachment B**)

(1) At least ten (10) years experience in the construction industry?

☐ Yes Number of Years: _____ ☐ No

(2) Experience on at least one (1) construction type as identified in 3.a?

☐ Yes Number of Projects _____ ☐ No

(3) Experience as a Project Manager on one (1) or more construction projects valued at \$100,000 or more?

☐ Yes Number of Projects _____ ☐ No

- b. Does your assigned Project Foreman/Superintendent have the following minimum qualifications and experience? (Attach Resume at **Attachment B**)

(1) At least ten (10) years experience in the construction industry?

☐ Yes Number of Years: _____ ☐ No

(2) Experience on at least one (1) construction type as identified in 3a.?

☐ Yes Number of Projects _____

(3) Experience as a Project Foreman/Superintendent on one (1) or more construction projects valued at \$100,000 or more?

☐ Yes Number of Years: _____ ☐ No

- c. Does your Firm have a Quality Assurance/Quality Control (QA/QC) Manager?

☐ Yes ☐ No

Name: _____ Years with your firm: _____

Present Position/Job Title: _____ Years in position: _____

List other project(s) this person has had a similar role for the past five (5) years:

Is your QA/QC a Principal or Officer of the firm?

() Yes () No

5. CAPACITY AND CAPABILITY TO PERFORM THE WORK

a. Resources: Total number of current employees: Project Managers _____
Estimators _____
Foreman _____
Tradesmen _____
Administration _____
Other _____

c. Does your firm have the immediate capacity to perform the work required for this project:

() Yes () No

d. Please list all projects currently under contract listed in 3a. with scheduled completion dates (Attachment C)

() See Attachment C () None

6. SAFETY

f. Does your firm have a written safety program compliant with current State regulations? Provide one (1) copy of your firm's written safety program at Attachment D.

() Yes () No (attach explanation)

g. Provide the experience modification Rate for the past five (5) years:

_____/_____/_____/_____/_____

h. Provide the Recordable Incident Rate for the past calendar year: _____

- i. Is your Firm free of committing serious or willful violations of federal or state safety laws as determined by a final non-appealable decision of a court or government agency?

☐ Yes

☐ No (attach explanation)

7. INSURANCE & CLAIMS HISTORY

- e. Is your firm free of any court judgments, pending litigation, arbitration and final agency decisions filed within the last five (5) years in a construction related matter in which the contractor, or any officer, is or was a party?

☐ Yes

☐ No (attach explanation)

- f. Has your firm during the past five (5) years been free of a determination by a court of competent jurisdiction that is filed a false claim with any federal, state or local government entity?

☐ Yes

☐ No (attach explanation)

- g. Does your firm have the ability to provide the required insurance in the limit stated in the project documents (General Liability and Comprehensive Auto at \$1 Million per occurrence and \$1 Million in the aggregate)?

☐ Yes

☐ No (attach explanation)

8. QUALITY ASSURANCE

- c. Does your firm have a written Quality Assurance Program? ☐ Yes ☐ No

- d. Note: if you have a Quality Assurance Program, please provide one (1) copy of the written Assurance Program for **Attachment E.**

9. LABOR CODE VIOLATIONS

- a. Has your firm during the past five (5) years, been free of any determinations by a court or an administrative agency of repeated or willful violations of laws and/or regulations pertaining to the payment of prevailing wages or employment of apprentices of public works projects? Refer to **Attachment F**

☐ Yes

☐ No

- b. Is the firm free of all Subcontractor Fair Practices Act violations for the past five (5) years?

(☐) Yes (☐) No (explain)

10. JUDGEMENTS/BREACH OF CONTRACT/ MEDIATIONS AND ARBITRATIONS

Attachment G

- a. List any judgments against the firm during the past 5 years.
Who initiated? What was the outcome?
- b. List any other actions brought against you for breach of contract during the past 5 years.
Who initiated? What was the outcome or current status?
- c. List all mediations/arbitrations in the last 5 years.
Who initiated? What was the outcome?

11. SUBCONTRACTOR COMMENTS

- a. Please provide further explanation of any of the attachments/items indicated, or other additional information you may want to submit to further clarify any of the information provided in this questionnaire as **Attachment H**

12. OTHER INFORMATION

- a. Certify 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 pre-listed subcontractors. Refer to **Attachment I**
- b. Additional information, pictures, diagrams, reports, etc. may be provided as outlined in the Request for Proposal (written qualification limitation of 5 pages will be attached as **Attachment J**

**THE UNDERSIGNED CERTIFIES THAT ALL OF THE QUALIFICATION
INFORMATION SUBMITTED WITH THIS FORM IS TRUE AND CORRECT.**

Name and Title

Firm Name

Signature

Address of Firm

E-mail Address

City/State/Zip

Telephone Number

Fax Number

END OF DOCUMENT

ATTACHMENT A
SUBCONTRACTOR’S STATEMENT OF QUALIFICATIONS

REFERENCE: 3.a., b., c.
Experience in the past 5 years with projects of similar size and scope

COMPLETE ONE FORM FOR EACH PROJECT LISTED ON THE QUESTIONNAIRE (MAXIMUM 3)

PROJECT DESCRIPTION

Project Type: _____ Owner: _____

Project Name and Location: _____

Gross Building Area (Sq. Ft.) _____ (☐ New (☐ Addition (☐ Renovation

Original Contract Amt.: \$ _____ Completion Date/Percentage Complete: _____

DESIGN PROFESSIONAL

Name of Firm: _____ Contact Name: _____

GENERAL CONTRACTOR

Name of Firm: _____ Contact Name: _____

CUSTOMER SATISFACTION

How was this measured? (☐ Customer Survey (☐ Attached (☐ Yes (☐ No (☐ Other (Describe)

ATTACHMENT B
SUBCONTRACTOR’S STATEMENT OF QUALIFICATIONS

REFERENCE: 4 a., b.
Key Personnel Resumes

ATTACH ONE (1) PAGE RESUMES OF THE PROPOSED

1. PROJECT MANAGER
2. PROJECT FOREMAN/SUPERINTENDENT
3. OTHER KEY PERSONNEL (OPTIONAL)

6. EDUCATION
High School, College, Trade Schools, Trade Seminars, Trade/Management Specialized Courses, Etc.

7. RELATED EXPERIENCE
Related experience should include the following:
 - a. Position Title
 - b. Duties and Responsibilities
 - c. Major accomplishments
 - d. Number of personnel supervised

8. PROJECT EXPERIENCE
Identify project experience requested in the Statement at 4.a. (2) (3), 4.b. (2) (3), and 4.c. (2). Include the project Title and Location.

9. Other information that demonstrates the individual’s strengths for this project.

10. Project Professionals and Project Owner Reference may be included.

ATTACHMENT C
SUBCONTRACTOR’S STATEMENT OF QUALIFICATIONS

REFERENCE: 5.b.
Projects currently under contract at square footage
Listed in 3.a. with scheduled completion dates

<u>PROJECT TITLE AND LOCATION</u>	<u>START DATE</u>	<u>PROJECTED COMPLETION</u>

ATTACHMENT D
SUBCONTRACTOR’S STATEMENT OF QUALIFICATIONS

REFERENCE: 6.a.
Copy of Firm’s written Safety Plan

SUBMIT COPIES OF SAFETY PLAN WITH SUBMITTAL PACKET

Include Work Loss Incidents & History

ATTACHMENT E
SUBCONTRACTOR’S STATEMENT OF QUALIFICATIONS

REFERENCE: 8.b.
Written Quality Assurance Program

SUBMIT COPIES WITH SUBMITTAL PACKET

REFERENCE: 9.b.
Affidavit of non-violation of Labor codes

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ATTACHMENT G
SUBCONTRACTOR’S STATEMENT OF QUALIFICATIONS

REFERENCE: 10. a. and b.
Judgments/Breach of Contract, Mediation and Arbitrations

- c. List any judgments against the firm during the past 5 years
Who initiated? What was the outcome?
- d. List any other actions brought against you for breach of contract during the past 5 years,
Who initiated? What was the outcome or current status?
- c. List all mediations/arbitrations in the last 5 years,
Who initiated? What was the outcome?

ATTACHMENT H
SUBCONTRACTOR’S STATEMENT OF QUALIFICATIONS

REFERENCE: 11.
Subcontractor comments

Additional written explanations or comments required for clarification of items contained in the Statement of Qualifications.

ITEM REF.
NUMBER

COMMENTS

ATTACHMENT I
SUBCONTRACTOR’S STATEMENT OF QUALIFICATIONS

REFERENCE: Other Information 12.a.

Certify 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 pre-listed subcontractors.

ATTACHMENT J
GENERAL CONTRACTOR’S STATEMENT OF QUALIFICATIONS

REFERENCE: 15.b.
Additional Information

Additional written qualifications (optional) are limited to a maximum of 5 pages of text/photos, single sided, diagrams, reports, etc. may be provided to support your Team. Material should be limited to 8-1/2” x 11” format.

END OF ATTACHMENT J

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: \$2,266,000.00

QUALIFICATION THRESHOLD FOR THIS PROJECT: \$113,300.00

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 24 (twenty-four) hours from the date and time of the submission of the Request for Proposal, to produce 6 (six) copies of the Subcontractor Qualifications Questionnaires listed below to the Procurement Manager.

SUBCONTRACTOR	ENTITY NAME

**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: \$11,300.00

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 Sub subcontractor.

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: MESA HEIGHTS TEACHERAGE SUBDIVISION – PHASE I

INVITATION TO BID NUMBER: 2020-841-110

The undersigned agrees that any and all claims which the firm may have or may incur 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:
2020-841-110

Sealed bid opening date:
FEBRUARY 04, 2021, 2:00 PM MST
CENTRAL CONSOLIDATED 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.				

[illegible]

SECTION 00 21 13
INSTRUCTIONS TO OFFERORS – PART A

1.1 DEFINITIONS AND TERMS

1.2 Terms used in these Bidding Documents which are defined in the Instructions to Offerors 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 Offeror 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. BIDDING DOCUMENTS:** The Bidding Requirements and the Contract Documents.
- G. BIDDING REQUIREMENTS:** Request for Proposals, Prebid Information, Instructions to Offerors, Information Available for Offerors, the Proposal Form, Supplements to the Proposal Form, and portions of Addenda relating to any of these.
- H. DAY:** Day shall mean calendar day unless defined otherwise.
- I. OFFEROR:** One who submits a Offer directly to the Owner, as distinct from a subcontractor who submits a bid to a contractor.
- J. PROPOSAL FORM:** A form which includes a specific space in which the bid price shall be inserted and which the Offeror shall sign and submit along with all other necessary submissions. An Offeror may submit a reasonable facsimile of the Proposal Form. Proposals received by facsimile or in electronic format will not be accepted.
- K. REQUESTS FOR PROPOSALS:** All documents including those attached or incorporated by reference or utilized for soliciting sealed proposals.
- L. RESPONSIBLE OFFEROR:** An Offeror who is properly licensed in accordance with the Construction Industries Licensing Act and 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, construction, or items of tangible personal property described in the Request for Proposals.
- M. RESPONSIVE PROPOSAL:** A proposal which conforms in all material respects to the requirements set forth in the Request for Proposals.
- N. SUCCESSFUL OFFEROR:** The Responsible Offeror to whom the Owner, on the basis of the Owner's evaluation, makes an award. A Successful Offeror does not become the contractor until an agreement with the Owner is signed.

2.1 EXAMINATION OF BIDDING DOCUMENTS AND SITE

2.2 Before submitting a Proposal, each Offeror 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 Offeror's observations with the Bidding Documents.

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

2.4 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.

2.5 The submission of a Proposal will constitute an incontrovertible representation by the Offeror 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.

3.1 BIDDING DOCUMENTS

3.2 COPIES OF BIDDING DOCUMENTS

3.2.1 Complete sets of the Bidding Documents in the number and for the deposit sum, if any, stated in the Request for Proposals may be obtained from the Design Professional (unless another issuing office is designated in the Request for Proposals). The deposit will be refunded to Offerors who submit a bona-fide proposal and return the bidding Documents in good and complete condition within fifteen (15) calendar days after opening of deadline for receipt of proposals.

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

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

3.3 INTERPRETATIONS

3.3.1 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 ten (10) days prior to the deadline for receipt of proposals 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.

3.3.2 Offerors 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.

3.4 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 deadline for receipt of proposals**. Any product with a 5 (five) year or greater extended warranty must be submitted no less than **forty-five (45) days prior to deadline for receipt of proposals, 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.

3.5 ADDENDA

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

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

3.5.3 Addenda will be issued no later than five (5) days prior to the deadline for receipt of proposals, except an addendum withdrawing the request for proposals or one which includes postponement of the deadline for receipt of proposals.

4.1 PROPOSAL PROCEDURES

4.2 FORM AND STYLE OF PROPOSALS

4.2.1 Proposals shall be submitted on forms identical to the form included with the Bidding Documents.

4.2.2 All blanks on the Proposal Form shall be filled in by typewriter or manually in ink.

4.2.3 Where so indicated by the makeup of the Proposal 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.

4.2.4 Any interlineation, alteration, or erasure must be initialed by the signer of the proposal.

4.2.5 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.

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

4.2.7 Each copy of the proposal shall include the complete name of the Offeror and a statement that the Offeror 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 Offeror to a contract. A Proposal 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 Proposal 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 proposal submitted by an agent shall have a current Power of Attorney attached certifying the agent's authority to bind the Offeror.

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

4.2.9 The address to which communications regarding the Proposal are to be directed must be shown.

4.2.10 The Project Name and Number, as well as the Request for Proposal Number, shall be clearly shown on the outside of the envelope in which the sealed Proposal 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 Proposal 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 Proposal amount submitted, unless otherwise stipulated, pledging that the Offeror 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 Offeror 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 Offerors 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 Proposals may be withdrawn, or
- C. all Proposals have been rejected.

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

4.2.5 If an Offeror is permitted to withdraw his Proposal before award, no action shall take place against the Offeror 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 PREPROPOSAL CONFERENCE

4.3.1 The Design Professional of Record shall conduct a **Preproposal Conference** approximately **fifteen (15), but not less than ten (10) days prior to the deadline for receipt of proposal** date stated in the Request for Proposals.

4.3.2 The Design Professional of Record and his consultants, as applicable, shall be represented. Prospective Offerors, 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 Offeror, Subcontractor, or Vendor to attend shall be interpreted to mean that the Bidding Documents are clear and acceptable to all non-participants at the Preproposal Conference. Such clarity and acceptability shall be presumed with respect to all Offerors.

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 Proposals are received from nonresident contractors and resident or veteran contractors and the lowest responsible Proposal is from a nonresident contractor, the contract shall be awarded to the resident or veteran contractor whose Proposal is nearest to the proposal price of the otherwise low nonresident contractor if the Proposal price of the resident or veteran contractor is made lower than the Proposal 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 Proposal on which the contractor desires to be given a preference;
- 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 Proposal 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 Offeror 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 11 16)

- 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 Offeror 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 00 43 36) 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 Offeror 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 Offeror may, at his option:

A. withdraw his Proposal, 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 Offeror 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 Offeror 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 Offeror 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 Offeror explaining the need for the replacement.

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

4.6 SUBMISSION OF PROPOSALS

4.6.1 Proposals, 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 Proposal envelope shall be addressed as required by Section 00 214 – Instructions to Offerors – Part B.

4.6.3 Proposals received after the date and time for receipt of proposals will be returned unopened.

4.6.4 The Offeror shall assume full responsibility for timely delivery of proposals to the Owner, including those Proposals submitted by mail or otherwise. Proposals hand delivered to the Proposal receipt address shall be received beginning one hour prior to the proposal. Proposals will be clocked in at the time received, which must be prior to the time specified. Proposals will then be held for evaluation.

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

4.7 CORRECTION OR WITHDRAWAL OF PROPOSALS

4.7.1 A proposal containing a mistake discovered before deadline for receipt of proposals may be withdrawn by an offeror prior to the deadline for receipt of proposals by delivering verbal, written or telegraphic notice to the location designated in the Request for Proposals as the place where proposals are to be received.

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

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

4.7.4 After the deadline for receipt of proposals, no modifications in proposal prices or other provisions of proposals shall be permitted.

4.7.5 After the deadline for receipt of proposals, an Offeror alleging a material mistake of fact which makes his Proposal non-responsive may be permitted to withdraw his Offer if the:

- A** mistake is clearly evident on the face of the Bid Document; or
- B.** Offeror 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 Proposal 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 OFFER

4.8.1 In submitting this proposal, the Offeror 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 PROPOSALS

A Request for Proposal may be canceled, or any or all Proposals 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 Proposals shall be returned to the Offeror.

4.10 CONSIDERATION OF PROPOSALS

4.10.1 RECEIPT, OPENING, AND RECORDING

Proposals received on time will be evaluated as indicated in the Request for Proposals.

4.10.2 PROPOSAL EVALUATION AND AWARD

4.10.2.1 The Owner shall have the right to waive technical irregularities in the form of the Proposals that do not alter the price, quality, or quantity of the services, construction, or items of tangible personal property proposal.

4.10.2.2 It is the intent of the Owner to award a contract to the highest qualified Offeror, provided the Proposal has been submitted in accordance with the requirements of the Bidding Documents. The unreasonable failure of a Offeror to promptly supply information in connection with an inquiry with respect to responsibility is grounds for a determination that the Offeror is not a responsible Offeror. 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 Offeror submitting the highest qualified proposal; except that, if sufficient funds are available to fund alternates, the Owner may award the contract to the responsible Offeror submitting the low combined Proposal 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 Proposal Form.

4.10.2.4 Discrepancies in the Proposal 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 Proposals or Proposals 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 proposal 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.

5.1 PROTESTS

5.2 Any offeror, or contractor who is aggrieved in connection with this procurement (Proposal) 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).

5.3 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).

5.4 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 offeror, or contractor concerning a procurement.

5.5 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).

5.6 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 offerors involved in the procurement (13-1-176, NMSA 1978).

6.1 POST-PROPOSAL INFORMATION

6.2 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.

6.3 RETURN OF BID SECURITY

All Bid Security in the form of checks, except those of the two highest qualified Offerors, will be returned immediately following the evaluation and checking of the Proposals. The retained bid security of the unsuccessful of the two highest qualified offerors, 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 Offeror, 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 Offeror, but will be released by the Purchasing Agent for the District after the Notice of Award is sent by the Owner.

6.4 EXECUTION AND APPROVAL OF CONTRACT

The Contract shall be signed by the Successful Offeror 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 Offeror of the signed Contract with Bonds and Certificate, the Offeror shall have the right to withdraw his proposal without penalty unless the Offeror 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.

6.5 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.

6.6 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 highest qualified Offeror, or the Work may be re-advertised and constructed under contract or otherwise, as the Owner may decide.

6.7 CONTRACTOR'S QUALIFICATIONS STATEMENT

Offerors 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.

7.1 OTHER INSTRUCTIONS TO OFFERORS

7.2 The proposal will be awarded in accordance with Subparagraph 4.10.2.3. The Owner may accept from the apparent highest qualified offeror prior to the Award, a reduction to the proposal cost or time and, may discuss with the apparent highest qualified offeror 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.

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

END OF SECTION

SECTION 00 21 14
INSTRUCTIONS TO OFFERORS – PART B

1.0 PROPOSAL ENVELOPE

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

CENTRAL CONSOLIDATED SCHOOL DISTRICT
CANDICE THOMPSON, DIRECTOR OF OPERATIONS
64 OLD SHIPROCK HS ROAD
SHIPROCK, NM 87420

Also on the front of the envelope the Offeror shall mark: the name and address of the Offeror shall in the upper left corner; the name of project, Request for Proposal Number, and date deadline to submit in the lower left corner; and, "**PROPOSAL ENCLOSED**" in the lower right corner or otherwise on the face thereof.

END OF SECTION

PROPOSAL FORM (Lump Sum or Unit Price)

PROPOSER'S Name and Address:

Telephone:

Fax:

Federal Tax ID #:

New Mexico Tax ID #:

CID License #

RFP NO.: 2021-CONST-504

PROJECT NAME: MESA HEIGHTS
TEACHERAGE SUBDIVISION – PHASE I

PSFA PROJECT NO.: O20-003 Central

LOCATION: SHIPROCK, NM

This Proposal is submitted to Owner:

**CENTRAL CONSOLIDATED SCHOOL
DISTRICT**
HIGHWAY 64, OLD HIGH SCHOOL
ROAD
SHIPROCK, NEW MEXICO 87420
(505) 368-4984

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

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

3. In submitting this Proposal, the Proposer represents, as more fully set forth in the Agreement, that:

A. the Proposer has examined copies of all the Proposal 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 Proposer has familiarized himself with the nature and extent of the Proposal 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 Proposer has carefully studied all reports and drawings of subsurface conditions which are identified in the Information Available to Proposers and accepts the determination set forth in the Information Available to Proposers of the extent of the technical data contained in such reports and drawings upon which the Proposer is entitled to rely;
- D. the Proposer has correlated the results of all such observations, examinations, investigations, explorations, tests, reports, and studies with the terms and conditions of the Proposal Documents;
- E. the Proposer has given the Design Professional written notice of all conflicts, errors, and discrepancies that he has discovered in the Proposal Documents, and the written resolution thereof by the Design Professional is acceptable to the Proposer;
- F. this Proposal 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 Proposer has not directly or indirectly induced or solicited any other Proposer to submit a false or sham Proposal; the Proposer has not solicited or induced any person, firm, or corporation to refrain from proposing; and the Proposer has not sought by collusion to obtain for himself any advantage over any other Proposer or over the Owner;
- G. the Proposer acknowledges that he has attended any mandatory pre-proposal conference scheduled by the Owner or the Design Professional pertaining to this project;
- H. the Proposer agrees to show clearly on the envelope in which the Proposal is submitted the Project Name and Number, and Invitation to Proposal Number; and,
- I. the Proposer will complete the Work for the following price(s) (**do not include any gross receipts tax in the price(s)**).

4. Proposals shall be presented in the form of a total Base Proposal under a Lump Sum Contract plus unit prices, that are selected by the Owner. A proposal must be submitted on all proposal items; segregated proposals will not be selected by the Owner.

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

_____ (\$)

B. UNIT PRICES

If the required quantities of the items listed below are increased or decreased by Change Order, the adjustment unit prices set forth below shall apply to such increased or decreased quantities:

UNIT PRICE A – 3-BEDROOM HOME

UNIT PRICE (in words):

_____ (\$)

UNIT PRICE B – 2-BEDROOM HOME

UNIT PRICE (in words):

_____ (\$)

UNIT PRICE C – 2-BEDROOM (MIRRORED) HOME

UNIT PRICE (in words):

_____ (\$)

6. The Proposer 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 270 days after 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 Five-Hundred Dollars (\$500.00) 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 Proposals and to waive any technical irregularities in the proposal.

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

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

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

9. The Proposer 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: (____) _____

CORPORATE SEAL HERE

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.

PROPOSER 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 Proposal Form.

SECTION 00 43 15
BID BOND

THE AMERICAN INSTITUTE OF ARCHITECTS



AIA Document A310

Bid Bond

KNOW ALL MEN BY THESE PRESENTS, that we
(Here insert full name and address or legal title of Contractor)

as Principal, hereinafter called the Principal, and
(Here insert full name and address or legal title of Surety)

a corporation duly organized under the laws of the State of
as Surety, hereinafter called the Surety, are held and firmly bound unto
(Here insert full name and address or legal title of Owner)

as Obligee, hereinafter called the Obligee, in the sum of
Dollars (\$),
for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind
ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by
these presents.

WHEREAS, the Principal has submitted a bid for
(Here insert full name, address and description of project)

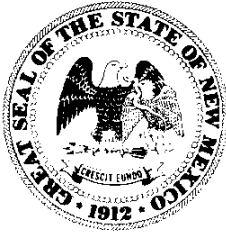
NOW, THEREFORE, if the Obligee shall accept the bid of the Principal and the Principal shall enter into a Contract
with the Obligee in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding
or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt
payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter
such Contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty
hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract
with another party to perform the Work covered by said bid, then this obligation shall be null and void, otherwise to remain
in full force and effect.

Signed and sealed this _____ day of _____ 19____

_____	{	_____ (Principal) _____ (Seal)
(Witness)		_____ (Title)
_____	{	_____ (Surety) _____ (Seal)
(Witness)		_____ (Title)

END OF SECTION

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

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 a 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	CRA License #	State	Phone #
Subscribed and sworn to before me this _____ day of _____, 20____.				
My Commission Expires: _____				
Notary Public				

Send completed application Taxation and Revenue Department
along with \$35.00 to: PO Box 5374
Santa Fe, NM 87500-5374

Signature of Applicant Date

ASD - 22244
INT - 06/12



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; <p style="text-align: center;">OR</p> <p>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.</p>			
SECTION III Annual Revenue and Documentation			
<p>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.</p> <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; <p style="text-align: center;">OR</p> <p>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.</p> <p style="text-align: center;">AND</p> <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 _____ COUNTY 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 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 _____ <small>(NOTARY SEAL)</small>		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.			

**APPLICATION FOR RESIDENT VETERAN CONTRACTOR CERTIFICATE
INSTRUCTIONS**

Beginning January 1, 2012, but not after June 30, 2022, New Mexico veteran contractors who wish to obtain a resident veteran contractor preference must first apply for and obtain a resident veteran contractor certificate issued by the New Mexico Taxation and Revenue Department (TRD). The preference may be used by the holder to obtain a bidding advantage when participating in a formal bid process or formal request for proposal process for the sale of goods or services to a New Mexico state or local public body. The contractor must submit with its bid or proposal a copy of a valid resident veteran contractor certificate.

So long as the contractor initially meets and continues to meet the necessary requirements, the certificate is valid for three years from the date of issuance. The contractor must submit a new application if the contractor's status has changed or if there is a change in ownership of more than fifty percent.

The purchasing agent for a public body may verify that a resident veteran contractor certificate is issued by TRD by accessing the TRD web site at <https://secure.mvd.newmexico.gov/residentcertificate/default.aspx>, or by calling (505) 827-0951.

RESIDENT VETERAN CONTRACTOR CERTIFICATE APPLICATION

TRD has prescribed form ASD-22244 that must be completed in order to obtain a resident veteran contractor certificate. The required contents of the form are summarized below.

SECTION I General Information

This section requires provision of the applicant's general business information, including basic contact information. The contact information provided must be that of the contractor or the contractor's authorized representative.

SECTION II Resident Veteran Contractor Status Information

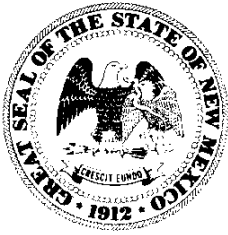
To complete the application, the CPA must select the contractor status category that applies to the contractor: existing contractor, new contractor, relocated contractor, or previously certified contractor or contractor previously eligible for certification. The CPA must select only the contractor status category that pertains to the applicant and indicate which statements included in the applicable category accurately describe the contractor. If any statement is not appropriate to or does not otherwise describe the applicant's business, it may not qualify for certification.

NOTE: When a contractor is an existing contractor, the application must indicate whether, during the previous five years, the contractor paid unemployment insurance on at least three full-time employees who are residents of New Mexico. When a contractor is a relocated contractor, the application must indicate whether at least 80% of the total personnel of the contractor in the prior year were New Mexico residents. For the purposes of this application, a New Mexico "resident" is considered to be a person who is domiciled in this state during any part of the calendar year or a person who is physically present in this state for at least 185 days during the calendar year.

SECTION III Annual Revenue and Documentation

Complete Section III by entering the previous year's annual revenues of the resident veteran contractor and attaching the documentation required. An application submitted without the required information and documentation will be incomplete.

SECTION IV	Affidavit
<p>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.</p> <p>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.</p>	
<p style="text-align: center;">APPROVALS AND PENALTIES</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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:</p> <ol style="list-style-type: none">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; and2. Is subject to an administrative penalty of up to \$50,000 for each violation. <p style="text-align: center;">REVOCATIONS</p> <p>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.</p> <p style="text-align: center;">APPLICATION AND FEE SUBMISSION</p> <p>Submit the application along with \$35 application fee to:</p> <p>New Mexico Taxation and Revenue Department Santa Fe District Office PO Box 5374 Santa Fe, NM 87502-5374</p> <p>For questions concerning the application process please call (505) 827-0951.</p>	



STATE OF NEW MEXICO
CENTRAL CONSOLIDATED SCHOOL DISTRICT
In Collaboration With
PUBLIC SCHOOL CAPITAL OUTLAY
PUBLIC SCHOOL FACILITIES AUTHORITY
Santa Fe, New Mexico 87502

MICHELLE LUJAN GRISHAM
GOVERNOR

JOE GUILLEN
CHAIR

JONATHON CHAMBLIN
DIRECTOR

(505) 988-5989

NOTICE OF INTENT TO AWARD

TO:

DATE:

PROJECT:

PROJECT NO.

ITB REF NO.

Ladies and Gentlemen:

THIS IS NOT AN AWARD. This letter is to advise you that the Central Consolidated School District is still considering the Apparent Low Bid offer with the intent to award the Project to you when all considerations and approvals are complete. Without authorizing you to incur any costs or obligation, with the exception of Building Permit Cost, the Central Consolidated School District would like you to proceed with administrative procedures such as application for Building Permit, submittals and the like in anticipation of the Award and to minimize the time to Project start-up.

OTHER CONDITIONS PRECEDENT (if none, write none)

None

You are reminded that at Notice to Award, but not at this time, you will be asked to produce, along with executed Agreement the following within ten (10) calendar days of that notice:

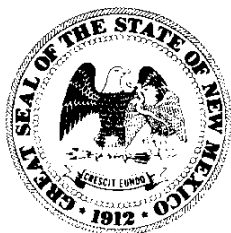
The Performance Bond, Labor and Material Payment Bond; Agent's Affidavit; Subcontractors List including contract amount of each, evidence of required bonds, costs of each bond, and beneficiary of each bond; evidence of DOL registration, evidence of CID licensure; Assignment of Antitrust Claims (required 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.

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.

Candice Thompson
District Representative

Distribution to:

- ☐ District Purchasing Agent (original)
- ☐ Design Professional of Record (copy)
- ☐ PSFA Contracts Administrator (copy)
- ☐ Other Bidders (copy)
- ☐ Other _____



STATE OF NEW MEXICO
CENTRAL CONSOLIDATED SCHOOL DISTRICT
In Collaboration With
PUBLIC SCHOOL CAPITAL OUTLAY
PUBLIC SCHOOL FACILITIES AUTHORITY
Santa Fe, New Mexico 87505

MICHELLE LUJAN GRISHAM
GOVERNOR

JOE GUILLEN
CHAIR

JONATHON CHAMBLIN
DIRECTOR

(505) 988-5989

NOTICE OF AWARD

TO:

DATE:

PROJECT:

PROJECT NO.

ITB REF NO.

Ladies and Gentlemen:

This letter is to advise you that the Central Consolidated 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:

	Description	Amount: (General Contract)	Amount: (Other separate contract)
Base Bid Amount:		\$	
Alternate #1:			\$
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: _____

Candice Thompson
District Representative
Central Consolidated School District

By: _____

David Biggs
PSFA Regional Manager

Distribution to:

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

Agreement between the Owner and the Contractor

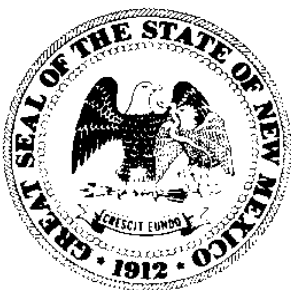
2019 Edition, Version 3.5

THIS DOCUMENT HAS IMPORTANT LEGAL CONSEQUENCES; CONSULTATION WITH AN ATTORNEY IS ENCOURAGED WITH RESPECT TO ITS COMPLETION

Project (short title):
Location:

Contract No.:
PSFA Project No.:

Distribution to:



- ☐ District Representative (original)
- ☐ Contractor (original)
- ☐ Design Professional (copy)
- ☐ PSFA Regional Manager (copy)
- ☐ PSFA Contracts Administrator (copy)
- ☐ Other _____

This Agreement entered into this _____ day of _____, 2020, by and between the parties as follows:

THE OWNER:

THE CONTRACTOR:

and, hereinafter "Owner" and,
PSFA ☒ IS ☐ IS NOT a Co-Owner in this Agreement.

CO-OWNER with OVERSIGHT:
PUBLIC SCHOOL FACILITIES AUTHORITY
1312 BASEHART ROAD, SE
SUITE 200
ALBUQUERQUE, NM 87106

DESIGN PROFESSIONAL OF RECORD:

Telephone: (505) (843-6272)
Fax: (505) (843-9681)

RECITALS

WHEREAS The Public School Capital Outlay Council (PSCOC) allocated funding from the Public School Capital Outlay Fund for the above referenced project on _____, 20____;

WHEREAS, the District, otherwise known as the Owner, has entered into Agreement with the PSCOC and its Public School Facilities Authority (PSFA) to act as Co-Owner, oversee and manage the work and make direct payment of Owner-approved expenses;

WHEREAS, the Owner may also oversee and manage the work and make direct payment of Owner-approved expenses in collaboration and agreement with the PSFA;

WHEREAS the Owner, 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 has let this contract according to the established State purchasing procedures for contracts of the type and amount let.

The OWNER and the CONTRACTOR agree as set forth below.

ARTICLE 1

THE CONTRACT DOCUMENTS

The Contract Documents consist of the following:

Bid Form	Notice to Proceed
Agreement Between Owner and Contractor	Conditions of the Contract (General,
Performance Bond	Supplementary, and Other Conditions)
Labor and Material Payment Bond	Drawings
Agent's Affidavit	Specifications
Certificate of Insurance	All Addenda Issued Prior to and All
Assignment of Antitrust Claims	Modifications Issued after Execution
Notice of Award	of This Agreement

These documents form the Contract, and all are as fully a part of the Contract as if attached to this Agreement or repeated herein. An enumeration of the Contract Documents appears in Article 7.

ARTICLE 2

THE WORK

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

ARTICLE 3

TIME OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

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 _____ after the date of written Notice to Proceed, except as hereafter extended by valid written Change Order by the Owner.

- a. Planned Notice To Proceed Date:
- b. Substantial Completion (all bid lots):

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 _____ (\$_____) per consecutive calendar day, not as a penalty, but as liquidated damages for such breach of this Contract.

ARTICLE 4

CONTRACT SUM

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 _____ Dollars (\$_____).

| The Contract sum is determined as follows:

	STATE TO ADEQUACY 57.00%	DISTRICT TO ADEQUACY 43.00%	DISTRICT ABOVE ADEQUACY 0.00%	TOTAL
	\$ -	\$ -	\$ -	\$ -
	\$ -	\$ -	\$ -	\$ -
Award Amount	\$ -	\$ -	\$ -	\$ -
Gross Receipts Tax@ 8.2500%	\$ -	\$ -	\$ -	\$ -
Contract Sum	\$ -	\$ -	\$ -	\$ -

Breakdown of required labor, material and performance and payment bond costs.

| Total cost of Contractor bond*\$

Total cost of all Subcontractor bonds
Total cost of all project bonds.....\$

*Contractor labor, material and performance and payment bond costs shall be calculated on Award Amount exclusive of GRT.

ARTICLE 5

PROGRESS PAYMENTS

Based upon Applications for Payment submitted to the Design Professional by the Contractor and Certificates for Payment issued by the Design Professional, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided in the Contract Documents for the period ending the last day of the month as follows:

Not later than twenty-one (21) days following the end of the period covered by the Application for Payment of the portion of the Contract Sum properly allocable to labor, materials, and equipment incorporated in the Work and the portion of the Contract Sum properly allocable to materials and equipment suitably stored at the site or some other location agreed upon in writing for the period covered by the Application for Payment, less the aggregate of previous payments made by the Owner; less such amounts as the Design Professional shall determine for all incomplete Work and unsettled claims as provided in the Contract Documents.

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate provided by State statute regulating prompt payment.

ARTICLE 6

FINAL PAYMENT

Final payment, constituting the entire unpaid balance of the Contract Sum, shall be paid by the Owner to the Contractor within thirty (30) calendar days after notification of the Owner by the Design Professional that all incomplete and unacceptable work that was noted during the Substantial Completion Inspection and listed on the attachment to the Certificate of Substantial Completion has been corrected, and provided the Contract has been fully performed, a Certificate for Final Completion and final Certificate for Payment has been issued by the Design Professional; and the Contractor has provided to the Owner a certified statement of Release of Liens (AIA Document G706A or approved form) and Consent of Surety and such other documents required by the General Conditions.

ARTICLE 7

GENERAL AND SPECIAL PROVISIONS

7.1 This document shall be executed in no less than five (5) counterparts, each of which shall be deemed an original.

7.2 Owner Provided Insurance. The Owner will not provide Builder's Risk.

7.2.1 Property Insurance/Builder's Risk. Contractor shall provide insurance which will protect the interests of the Contractor and Subcontractors in the Work. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, or until no person or entity other than the Owner has an insurable interest in the property required by this Paragraph to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, and Subcontractors in the Project.

7.3 This Agreement shall be governed exclusively by the provisions hereof and by the laws of the State of New Mexico as the same from time to time exist.

7.4 Terms used in this Agreement which are defined in the Conditions of the Contract shall have the meanings designated in those Conditions.

7.5 As between the parties to this Agreement: As to all acts or failures to act by either party to this Agreement, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the relevant Date of Substantial Completion of the Work; and as to any acts or failures to act occurring after the relevant Date of Substantial Completion, not later than the date of the Owner's approval of the Final Certificate of Payment.

7.6 The Contractor shall hold harmless and indemnify the Owner against any and all injury, loss, or damage, including cost of defense - including but not limited to court costs and attorneys' fees - arising out of the negligent acts, errors, or omissions of the Contractor.

7.7 This Agreement shall not become effective until:
A. approved by the Public School Facilities Authority; and,
B. signed by all parties required to sign this Agreement.

7.8 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.

7.9 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.

7.10 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.

7.11 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:

OWNER:

CONTRACTOR:

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.

7.12 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.

7.13 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.

7.14 This document shall be executed in no less than five (5) counterparts, each of which shall be deemed an original.

7.15 Certificates and Documents Incorporated. All certificates and documentation required of the Contractor by the provisions of this Agreement shall be attached to this Agreement at the time of execution and are hereby incorporated by reference as though set forth in full in this Agreement to the extent they are consistent with its conditions and terms.

7.16 Separability. 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.

7.17 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.

7.18 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.

7.19 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.

7.20 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.

7.21 Relationship of Contract Documents. The Contract Documents are complementary, and any requirement of one contract document shall be as binding as if required by all.

7.22 Pursuant to Section 13-1-191, NMSA 1978, reference is hereby made to the Criminal Laws of New Mexico (including Sections 30-14-1, 30-24-2, and 30-41-1 through 3, NMSA 1978) which prohibit bribes, kickbacks, and gratuities, violation of which constitutes a felony. Further, the Procurement Code (Sections 13-1-28 through 13-1-199, NMSA 1978) imposes civil and criminal penalties for its violation.

7.23 The Contract Documents, which constitute the entire Agreement between the Owner and the Contractor, are listed in Article 1 and, except for Modifications issued after execution of this Agreement, are enumerated in this Paragraph 7.21.

7.24.1 The following documents bound in the Project Manual dated: _____.

DOCUMENTS

7.24.3 The following Drawings, dated _____.

GENERAL

7.24.3 Addenda

END OF ARTICLE 7

Contract No.:

PSFA Project No.:

AGREED: This Agreement is entered into as of the day and year first written above.

CONTRACTOR

By:

Printed Name:

Title:

Date:

Federal Identification Number:

NM CRS Identification Number:

OWNER:

By:

Printed Name:

Title:

Date:

APPROVED: This Agreement is entered into as of the day and year first written above.

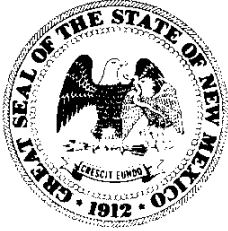
PUBLIC SCHOOL FACILITIES AUTHORITY

By:

Printed Name:

Title: -

Date:



STATE OF NEW MEXICO
CENTRAL CONSOLIDATED SCHOOL DISTRICT
In Collaboration With
PUBLIC SCHOOL CAPITAL OUTLAY
PUBLIC SCHOOL FACILITIES AUTHORITY
Santa Fe, New Mexico 87505

MICHELLE LUJAN GRISHAM
GOVERNOR

JOE GUILLEN
CHAIR

JONATHON CHAMBLIN
DIRECTOR

(505) 988-5989

NOTICE OF PROCEED

TO:

DATE:

PROJECT:

PROJECT NO.

ITB REF NO.

CONTRACT NO.

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 _____, 20__, 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 have delivered 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.

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.

In addition, you must (add any other requirements):

PROJECT NO.
CONTRACT NO.

OWNER:

Central Consolidated School District
64 Old Shiprock HS Road
Shiprock, NM 87420
Phone: 505-598-4561

CO-OWNER:

Public School Facilities Authority
401 Don Gaspar
Santa Fe, NM 87505
Phone: 505-988-5989
Fax: 505-988-5933

By: _____

Candice Thompson
District Representative
Central Consolidated School District

By: _____

David Biggs
PSFA Regional Manager

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.

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



CERTIFICATE OF LIABILITY INSURANCE

DATE (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 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).

PRODUCER	CONTACT NAME:	
	PHONE (A/C, No, Ext):	FAX (A/C, No):
Broker's Name and Address	E-MAIL ADDRESS:	
	INSURER(S) AFFORDING COVERAGE	
INSURED	INSURER A:	
	INSURER B:	
	INSURER C:	
	INSURER D:	
	INSURER E:	
	INSURER F:	
Insured's Name and Address		NAIC #

COVERAGES		CERTIFICATE NUMBER:		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.						
INSR LTR	TYPE OF INSURANCE	ADDL SUBR INSR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
	GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PROJECT <input type="checkbox"/> LOC		SAMPLE			EACH OCCURRENCE \$1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 300,000 MED EXP (Any one person) \$ 5,000 PERSONAL & ADV INJURY \$1,000,000 GENERAL AGGREGATE \$2,000,000 PRODUCTS - COMP/OP AGG \$2,000,000
	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS		SAMPLE			COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED <input checked="" type="checkbox"/> RETENTION \$					EACH OCCURRENCE \$1,000,000 AGGREGATE \$ \$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) <input type="checkbox"/> Y/N If yes, describe under DESCRIPTION OF OPERATIONS below	N/A	SAMPLE			<input checked="" type="checkbox"/> WC STATUTORY LIMITS <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Name and Address of School District

and as Additionally Insured

PSCOC - PSFA, 1312 Basehart Road, SE, Suite 200, Albuquerque, NM 87106

CERTIFICATE HOLDER	CANCELLATION
	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE

Instructions:

1. **Contractor** shall attach pre-signed or un-signed form to Performance Bond and Labor and Material Bond and submit to Design Professional with Post-Bid submittals (see Section 00 2113 - Instructions to Bidders).
2. **District** shall review Surety for acceptability and, if approved, sign form prior to approval of Contract.
3. After review and approval of bonds, District shall include signed form with approved Contract in transmittal to PSFA.

REVIEW AND APPROVAL:

This Bond has been executed by a Surety 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.

APPROVED:

By: _____
Owner's Representative or Governing Authority

Date: _____

MODIFICATION / CHANGE REQUEST

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 _____

MODIFICATION / CHANGE REQUEST (MCR) FORM

00 6360 - 1

MODIFICATION / CHANGE REQUEST NO. _____

DATE: _____

PROJECT NO. _____

DESCRIPTION OF PROPOSED WORK:

NOTE: Fill out a separate worksheet for each subcontractor on this MCR. The GC shall use this same form to summarize the total of all subcontractor proposals while adding GC costs. Attach all worksheets and breakdowns to summary sheet for each MCR.

SUBCONTRACTOR'S COSTS (ATTACH SUBCONTRACTOR'S SHEET AND COST BREAKDOWNS):*		
1	Total of subcontractor's material (attach itemized breakdown):	\$ -
2	Total of subcontractor's labor cost including fringe benefits and labor burden (attach itemized breakdown):	\$ -
3	Other directly attributable costs allowed (attach itemized breakdown):	\$ -
4	Subtotal:	\$ -
5	Subcontractor's O&P (0 % of Item 4)	\$ -
6	Subcontractor's Bond:	\$ -
7	Permits paid by subcontractor:	\$ -
8	Subcontractor's Total Costs:	\$ -

GENERAL CONTRACTOR'S COSTS (ATTACH WORKSHEETS)*		
9	GC's material (attach itemized breakdown):	\$ -
10	General Contractor's labor cost including fringe benefits and labor burden (attach itemized breakdown) @ (0 %):	\$ -
11	Construction equipment (rental):	\$ -
12	Directly attributable field supervision, insurance, etc. (attach itemized breakdown):	\$ -
13	Subtotal:	\$ -
14	General Contractor's Overhead and Profit on subcontractor (0 % of Item 8)	\$ -
15	General Contractor's Overhead and Profit on work by General Contractor's own forces (0 % of Item 13):	\$ -
16	Subtotal (sum of Items 13,14, and 15):	\$ -
17	Permits paid by General Contractor:	\$ -
18	Subtotal (sum of Items 8,16, and 17):	\$ -
19	Insurance (0 % of Item 18):	\$ -
20	Subtotal (sum of Items 18 and 19):	\$ -
21	Bond (0 % of Item 20):	\$ -

22	MCR Subtotal (sum of Items 20 and 21):	\$ -
23	Gross Receipts Tax (7.0000 % of Item 22):	\$ -
24	General Contractor's total cost (sum of Items 22 and 23):	\$ -

* Allowable costs and percentages shall not exceed those indicated in Article 7.2.5.

School District

In Collaboration With

PUBLIC SCHOOL CAPITAL OUTLAY COUNCIL
PUBLIC SCHOOL FACILITIES AUTHORITY

JOE GUILLEN

CHAIR

JONATHAN CHAMBLIN

EXECUTIVE DIRECTOR

PSFA PROJECT # _____ DISTRICT PROJECT # _____

PROJECT NAME: _____

CONTRACTOR: _____

CHANGE ORDER # _____ **DATE:** _____

PSFA PO# _____ DISTRICT PO# _____

DP: _____ **DP PROJECT #** _____

Distribution to:

District Representative

Design Professional of Record

PSFA Regional Manager

PSFA Contracts Administrator

Contractor

Other

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.

MCR #	SHORT DESCRIPTION	COST TO ADEQUACY	COST ABOVE ADEQUACY	STATE TO ADEQUACY	DISTRICT TO ADEQUACY	TOTAL DISTRICT
		\$ -	\$ -	\$ -	\$ -	\$ -
		\$ -	\$ -	\$ -	\$ -	\$ -
		\$ -	\$ -	\$ -	\$ -	\$ -
		\$ -	\$ -	\$ -	\$ -	\$ -
		\$ -	\$ -	\$ -	\$ -	\$ -
		\$ -	\$ -	\$ -	\$ -	\$ -
		\$ -	\$ -	\$ -	\$ -	\$ -
		\$ -	\$ -	\$ -	\$ -	\$ -
		\$ -	\$ -	\$ -	\$ -	\$ -
		\$ -	\$ -	\$ -	\$ -	\$ -
		\$ -	\$ -	\$ -	\$ -	\$ -
SUBTOTAL		\$ -	\$ -	\$ -	\$ -	\$ -
NMGRT @ 0.0000%		\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL		\$ -	\$ -	\$ -	\$ -	\$ -

	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:	\$	-

PSFA PROJECT # 0

PROJECT NAME: 0

CHANGE ORDER # 0

CONTRACTOR: 0

CHANGE ORDER TOTAL \$ - STATE SHARE TO ADEQUACY \$ - TOTAL DISTRICT \$ -

By: _____ Name of District Representative School District	By: _____ Name of Signatory 0	By: _____ Name of Signatory 0
Date: _____	Date: _____	Date: _____
Reviewed By: _____ Name of Regional Manager PSFA REGIONAL MANAGER Date: _____		Approved By: _____ Martica Casias PSFA DEPUTY DIRECTOR Date: _____



STATE OF NEW MEXICO
PUBLIC SCHOOL FACILITIES AUTHORITY
PUBLIC SCHOOL CAPITAL OUTLAY COUNCIL

General Conditions of the Contract for
Construction
2019 Edition, Version 3.1a

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ARTICLE 1 GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents consist of the Agreement between Owner and Contractor (hereinafter the Agreement), Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications and Addenda issued prior to execution of the Contract, and Modifications.

Modifications are (1) a written amendment to the Contract signed by Owner and Contractor, (2) Modification / Change Request hereinafter referred to as MCR approved by Owner, Contractor and Design Professional, (3) Change Order, or (4) a written order for a minor change in the Work, hereinafter referred to as Supplemental Instruction issued by the Design Professional. Unless specifically enumerated in the Agreement, the Contract Documents do not include other documents such as bidding requirements (advertisement or Invitation to Bid, Instructions to Bidders, sample forms, the Contractor's bid or portions of Addenda relating to bidding requirements).

1.1.2 THE CONTRACT

The Contract Documents form the 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 of any kind (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. The Design Professional shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Design Professional's duties.

1.1.2.1 Each and every provision of law and clause required by law to be inserted in this Contract shall be read and enforced as though it were included herein; and if through error or otherwise any such provision is not inserted, or is not correctly inserted, then upon the written application of either party the Contract shall be amended without cost to make such insertion or correction and that the remainder of this Contract shall remain in effect and not be affected thereby.

1.1.3 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. .

1.1.4 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.

1.1.5 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.

1.1.6 THE SPECIFICATIONS

The Specifications are the written requirements of the Contract Documents for products, materials, workmanship, and performance of related services.

1.1.7 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.

1.1.8 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 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, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

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.** 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,
- 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. Addenda shall govern over all other Contract Documents and subsequent Addenda shall govern over prior Addenda only to the extent modified;
2. between drawings and specifications, the specifications shall govern;
3. within the drawings:
 - a) schedule, when identified as such, shall govern over notes or other directions included within the drawings.
 - b) specific note shall govern over general note.
 - c) note evidently intended to be used as a general or typical note, shall be used as such throughout.
 - d) dimensions provided shall take precedence over scaled measurements.
 - e) large scale drawings shall take precedence over smaller scale drawings; and
4. General Conditions shall govern over all sections of the Contract Documents, except as modified by Supplementary General Conditions or Addenda.
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

1.3.1 Within the General Conditions, these terms are capitalized when they are used specifically in relations 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

1.4.1 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. They are not to be used on another project. 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.

2.1 GLOSSARY OF COMMONLY-USED TERMINOLOGY

2.1.1 These General Conditions utilize specific terms which relate to the Owner's organization, systems, and standard forms and documents. Examples of such terms are listed and defined as follows:

- 1. "Modification Change Request (MCR)"** is a written document required by the Owner on matters involving changes in the Work, and as defined by Paragraph 7.2.
- 2. "PSFA-CIMS"** is the PSFA internet-based project communications system required for use on the Project, as defined in Subparagraph 4.2.4.3..
- 3. "Public School Capital Outlay Council (PSCOC)"** is the body with responsibility to approve allocations for public school capital outlay assistance.
- 4. "Public School Facilities Authority (PSFA)"** is the agency, under the Public School Capital Outlay Council (PSCOC) charged with the responsibility for overseeing projects.

ARTICLE 2 OWNER

2.1 GENERAL

2.1.1 The Owner 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 Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Subparagraph 4.2.1, the Design Professional does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

2.1.2 If Project includes PSCOC funding then:

1. the Owner, referred to throughout the Contract Documents, shall be interpreted to be both the School District and the Public School Facilities Authority (PSFA) as if singular in number; and,
2. there shall be two (2) Owner representatives - ONE REPRESENTING School District and one representing PSFA. Agreement by both representatives shall be required in all instances where the Contract Documents require Owner approval; and,
3. provisions of Subparagraph 4.2.4.3 requiring use of the PSFA CIMS system shall apply; and,
4. Work shall be fully in accordance with the Contract Documents, including all contractual and implied responsibilities; and,
5. after Final Completion in accordance with Paragraph 9.11 the Contract requirements shall recognize only the School District as the Owner.

2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.2.1 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.

2.2.2 Except for permits and fees, including those required under Subparagraph 3.7.1, 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.

2.2.3 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.

2.2.4 Unless stated otherwise in the Contract Documents, the Owner shall furnish in accordance with Article 6 specific testing, adjusting and compliance monitoring and explicitly:

1. geotechnical testing and analysis including soil testing and compaction, but excluding load testing for caissons and piers; and,
2. concrete testing including slump analysis and compression testing with, at the Owner's request, the Contractor responsible for forming test cylinders or similar; and

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.

2.2.5 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.

2.2.6 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.

2.3 OWNER'S RIGHT TO STOP THE WORK

2.3.1 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 this right for the benefit of the Contractor or any other person or entity, except to the extent required by Subparagraph 6.1.3.

2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

2.4.1 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.

2.4.2 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 or its surety. 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.

2.4.3 In carrying out the Owner's right to complete the Work in accordance with Paragraph 2.4, 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 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.

3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

3.1.3 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.

3.1.4 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.

3.1.5 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.

3.1.6 Bribes, Gratuities and Kickbacks

3.1.6.1 It is illegal in the State of New Mexico for any public employee to solicit or accept anything of value in connection with award of contract for this Bid and for any person to offer or pay anything of value to any such public employee (30-24-1 and 30-24-2, NMSA 1978).

3.1.6.2 Pursuant to Section 13-1-191, NMSA 1978, reference is hereby made to the Criminal Laws of New Mexico (including 30-24-1, 30-24-2, and 30-41-1 through 30-41-3, NMSA 1978), which prohibit bribes, kickbacks, and gratuities, and violation of which constitutes a felony. Further, the Procurement code (13-1-28 through 13-1-199, NMSA 1978) imposes civil and criminal penalties for its violation.

3.1.7 Assignment of Antitrust Claims

3.1.7.1 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.

3.1.7.2 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.

3.1.8 Contracts with Nonresident Persons or Partnerships or Un-admitted Foreign Corporations; Agent for Service of Process

If Contractor is a non-resident person or partnership or a foreign corporation not admitted to do business in the State, Contractor will comply with all requirements of NMSA 1978 §§ 13-4-21 through 13-4-24 for designation of an agent for service of process.

3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

3.2.1 Since the Contract Documents are complementary, 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, 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. These obligations are for the purpose of facilitating construction by the Contractor and for the purpose of discovering errors, omissions in the Contract Documents; any errors, inconsistencies or omissions discovered by the Contractor shall be reported promptly in writing to the Design Professional as a Request for Interpretation in accordance with Subparagraph 3.2.4.

3.2.1.1 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 or omissions noted by the Contractor during this review shall be reported promptly in writing to the Owner and to the Design Professional, but 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. The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations, but any suspected non conformity discovered by or made known to the Contractor shall be reported promptly in writing to the Owner and to the Design Professional. 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.

3.2.3 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 and 3.2.1.1, the Contractor shall make Claims as provided in Subparagraphs 4.3.6 and 4.3.7. If the Contractor fails to perform the obligations of Subparagraphs 3.2.1 and 3.2.1.1, 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.

3.2.4 REQUEST FOR INTERPRETATION

3.2.4.1 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 detailed:

1. reference(s) to Specification number, Drawing page and detail, and the like;
2. description of issue;
3. drawings, photos or sketches of conditions, if necessary; and,
4. submittals or other information as necessary to facilitate resolution.

3.2.4.2 Request for Interpretation may be initiated only by the Contractor and shall be answered by Design Professional within **ten (10) days**, or other reasonable time agreed upon between the parties. All Subcontractor RFI's must be initiated through the Contractor. All answers to RFI's by the Design Professional's consultants or Owner must be initiated through the Design Professional.

3.2.4.3 If substitutions are allowed after the contract award, RFI shall not be used for any substitution request (see Subparagraph 3.4.2).

3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

3.3.1 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. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall

be solely responsible for any resulting loss or damage not due to negligence of the Contractor, its employees, subcontractors or their agents or employees. This paragraph shall not be deemed to create a duty on the part of the Design Professional or the Owner to the Contractor, Subcontractor or their employees to monitor for jobsite safety.

3.3.2 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.

3.3.3 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.

3.4 LABOR AND MATERIALS

3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and 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.

3.4.2 The Contractor may request substitution of material only if:

1. allowed after the contract award;
2. all supporting information has been evaluated and approved by the Contractor;
3. includes a detailed itemized comparison of the proposed substitution with the specified product;
4. acceptance does not include substantial revision of Contract Documents, unless Contractor agrees to reimburse the Owner for those costs; and,
5. substitution request is submitted as a formal MCR with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order.

3.4.3 The Contractor 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.

3.5 WARRANTY

3.5.1 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, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform to the requirements of the Contract Documents. Work 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 TAXES

3.6.1 Gross Receipts Tax (GRT)

3.6.1.1 Section 7-10-4, NMSA 1978 provides that any person (as defined in Section 7-10-3, NMSA 1978) performing services for the State, as those terms are used in the Gross Receipts Tax Registration Act (Chapter 7, Article 10, NMSA 1978), must be registered and be issued an identification number with the Taxation and Revenue Department to pay the GRT.

3.6.1.2 The identification number is needed to properly complete the approval process of the Contract; therefore, so as to cause no delay in the processing, the Contractor must register with the Department. For 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.

3.6.1.3 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.

Exception: Contractor shall not be responsible for any Tribal Employment taxes, such as, NBAT or TERO taxes.

3.6.1.4 Failure of the Contractor to be registered with TRD for payment of Gross Receipts Tax will result in all payment to Contractor to be withheld until Contractor provides adequate evidence of registration with TRD.

3.6.2 Nonresident Contractor's Requirements for Gross Receipts Tax Surety Bond

3.6.2.1 Section 7-1-55A, NMSA 1978 provides that any person (as defined in Section 7-1-3, NMSA 1978) engaged in the construction business who does not have his principal place of business in New Mexico and enters into a prime construction contract to be performed in this State shall, at the time such contract is entered into, furnish the Taxation and Revenue Department 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 applicable rate of the GRT to secure payment of the tax imposed on the gross receipts from the Contract. He shall obtain a certificate from the Taxation and Revenue Department that the requirements of this paragraph have been met.

3.6.2.2 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 his 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 (7-1-55B, NMSA 1978).

3.6.2.3 In addition to the above requirements, the Contractor will be subject to all the requirements of Section 7-1-55, NMSA 1978.

3.7 PERMITS, FEES AND NOTICES

3.7.1 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.

3.7.2 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.

3.8 ALLOWANCES

3.8.1 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.

3.8.2 Unless otherwise provided in the Contract Documents:

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.
2. Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances;
3. 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 Change Order shall reflect:
 - a) the difference between actual costs and the allowances under Clause 3.8.2.1; and,
 - b) changes in Contractor's costs under Clause 3.8.2.2.

3.8.3 Materials and equipment under an allowance shall be selected by the Owner in sufficient time to avoid delay in the Work.

3.9 SUPERINTENDENT

3.9.1 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 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.

3.9.2 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.

3.10 CONTRACTOR'S SCHEDULES, LOGS, MEETINGS AND REPORTS

3.10.1 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 suppliers 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.

3.10.1.1 The Contractor shall perform the Work in general accordance with the most recent schedule submitted to the Owner and Design Professional.

3.10.2 The Contractor shall prepare before the second payment application and keep current, for the Design Professional's approval, a schedule of submittals which 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.

3.10.3 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 such notes 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:

1. adoption of previous week's meeting notes that include list of attendees;
2. new business;
3. old business;
4. items requiring action with those assigned to action and expected action date;
5. outstanding RFI's;
6. outstanding submittals; and,

7. other business including review of Progress Report or Payment Application if appropriate.

Meetings shall be open forum, 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. Phone or web conferencing may be used if effective in the opinion of the Owner.

3.10.3.1 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 prepared Progress Report shall review the Project Schedule, review the Schedule Recovery Plan if necessary, and review the Three-Week-Look-Ahead Schedule.

3.10.3.2 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.

3.10.4 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 every company that has worked or will do work on the Project. List shall include company, 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.

3.10.5 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:

1. report date and who prepared the report;
2. weather conditions - low temp, high temp, visibility, humidity, wind, wind direction, cloud conditions, precipitation amount, other notes;
3. companies present by name and their - number of workers, work location, total man hours that day for each company;
4. equipment - type, source, units of work done, location of work, hour meter reading;
5. material brought to site - description, units, quantity, quality, location, time;
6. visitors to site - name, company, time;
7. safety concerns - company, contact, noticed by, work activity, safety issue, requirement, outcome; and,
8. quality assurance and control - company, description of issue, specification section, issued by.

3.11 DOCUMENTS AND SAMPLES AT THE SITE

3.11.1 The Contractor shall maintain at the site for the Owner, one record copy of the As-Built Drawings, Specifications, Addenda, 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 4.2.4.1 with web access at the site shall be considered "at the site".

3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

3.12.1 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.

3.12.2 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.

3.12.3 Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

3.12.4 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 4.2.7. 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.

3.12.4.1 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.

3.12.4.2 If substitutions are allowed after the contract award, a submittal shall not be used for any substitution request (see Subparagraph 3.4.2).

3.12.5 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.

3.12.6 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.

3.12.7 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.

3.12.8 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 3.4.2, 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.

3.12.9 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.

3.12.10 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. The Owner and the Design Professional shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such Design Professionals, provided the Owner and Design Professional have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Subparagraph 3.12.10, the Design Professional will review, approve or take other appropriate action on submittals

only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

3.12.11 The Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

3.13 USE OF SITE

3.13.1 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 3.13.

3.13.2 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.

3.13.3 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.

3.13.4 The Contractor will bear the cost and be responsible for temporary lighting, heating and cooling for the entire project.

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.

3.13.5 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.

3.13.6 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 3.13.3.

3.13.7 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.

3.13.8 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

3.13.9 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.

3.13.10 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.

3.13.11 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.

3.13.12 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 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.

3.13.13 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 work day hours or other similar changes must be submitted least forty-eight (48) hours in advance to the Owner for consideration.

3.13.14 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 a:

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;
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. 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,
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, re-routing 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.

3.13.15 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, etc., into drains and sewers.

3.13.16 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.

3.13.17 In accordance with Paragraphs 3.15, 6.3, 10.2 and others of the General Conditions, the Contractor shall be responsible for the daily removal and disposal of all rubbish, debris and trash from the site and building which results from 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 withhold cost from any amounts owing to Contractor.

3.13.18 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 that including plumbing fixtures, equipment, windows, floors, walls, light fixtures and the like in accordance with Paragraph 3.15 of the General Conditions.

3.13.19 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.

3.13.20 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 in accordance with Paragraph 3.3 and other parts of the General Conditions.

3.13.21 Jobsite Requirements Pertaining to Personnel:

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 3.10.3 or as otherwise determined by the Owner;

2. 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 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;
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;
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,
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 13.8.4.1.

3.14 CUTTING AND PATCHING

3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly.

3.14.1.1 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.

3.14.2 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.

3.15 CLEANING UP

3.15.1 The Contractor on a daily basis shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove from and about the Project waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials and shall then thoroughly clean the premises and the site to the Owner's satisfaction.

3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost thereof shall be charged to the Contractor in accordance with Paragraph 6.3.

3.16 ACCESS TO WORK

3.16.1 The Contractor shall provide the Owner and Design Professional access to the Work in preparation and progress wherever located.

3.17 ROYALTIES, PATENTS AND COPYRIGHTS

3.17.1 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.

3.18 INDEMNIFICATION

3.18.1 To the fullest extent permitted by law and to the extent claims, damages, losses or expenses are not covered by Project Management Protective Liability insurance purchased by the Contractor in accordance with Paragraph 11.3, the Contractor shall indemnify and hold harmless the Owner, Design Professional, Design Professional's consultants, and agents and employees of any of them 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, damage, 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 3.18.

3.18.2 In claims against any person or entity indemnified under this Paragraph 3.18 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 Subparagraph 3.18.1 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.

3.19 REPRESENTATIONS AND ASSURANCES

3.19.1 The Contractor, in addition to the requirements of the Contract Documents, represents to the Owner, as an inducement to the Owner to execute the Owner-Contractor Agreement, which representations will survive the execution and delivery of the Agreement and the completion of the Work that 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. in accordance with Subparagraph 3.1.4, is authorized and properly licensed to do business in the State of New Mexico and in the locale where the Work is located;

4. in execution of the Agreement and performance thereof is within the Contractor's duly authorized powers; and,
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:
 - 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.

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, Contractor 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 against whom the Contractor has no reasonable objection 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 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 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 3.3.1. 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 not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Design Professional will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

4.2.4 COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION

4.2.4.1 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.

4.2.4.2 English is the language that will be used on site to issue all directions, used in all project related meetings, and used in all project related correspondence. Contractor, Subcontractors, material suppliers and equipment suppliers' foremen and supervisory staff, must be able to read and converse in English, and be able to receive and understand all directions issued by the Owner and Design Professional.

4.2.4.3 In accordance with Subparagraph 2.1.2, with the Contract Documents, or otherwise required by Owner, the Contractor, Design Professional and Owner shall utilize PSFA-CIMS for project communications and shall:

1. create and respond to all contractual communications through the PSFA-CIMS including, but not limited to, Daily Reports, RFI's, MCR's, Meeting Minutes, Submittal Log and Punch Lists;
2. provide an adequate number of users to properly manage the Project in accordance with the Contract Documents and the Project Schedule;

3. have access to the Internet and an Internet e-mail address, of their own choice, and provide to the PSFA the names, positions, and e-mail addresses of all individuals who will have access to the PSFA-CIMS;
4. contract directly with a PSFA authorized training vendor if the limited PSFA training is not deemed sufficient to correctly and consistently use the PSFA-CIMS;
5. have adequate computing hardware and software (listed below) to run PSFA-CIMS; and,
 - a) Browser – **Internet Explorer 6.0 SP2 or 7.0**
 - b) Operating system - **Windows® XP SP2**
 - c) Display – **1024x768**
 - d) CPU – **1.4 GHz or greater**
 - e) Connection – **ISDN, T1, broadband, or DSL**
 - f) RAM – **1024 MB/1 GB or higher**
6. agree that use of this PSFA-CIMS software will not replace or change any contractual responsibilities of the Contract Documents; and,
7. have installed Adobe Acrobat 7.0, or higher .pdf converter or equal; and,
8. optionally have, but not required to have, as a benefit to sending images to Design Professional and Owner as an attachment to an RFI or other CIMS document instead of faxing or mailing, an attached scanner minimum 800 x 600 pixels and a digital camera minimum resolution of one (1) mega pixels.

For PSFA-CIMS information on installation and use of the PSFA-CIMS or for scheduling training contact the PSFA-CIMS administrator at (505)843-6272 or e-mail question to training_support@nmpsfa.org and include PSFA-CIMS support in subject line.

4.2.5 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.

4.2.6 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 Subparagraphs 13.5.2 and 13.5.3, 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.

4.2.7 Unless rejected in accordance with Subparagraph 3.12.4.1 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.

4.2.7.1 The Contractor shall be responsible for cost of inordinate re-reviews, exceeding two, by Design Professional due to non-compliance with Subparagraph 3.12.6.

4.2.7.2 Rejection of any submittal due to non-compliance with Subparagraph 3.12.6 shall not be the basis for claim for a project delay.

4.2.8 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.

4.2.8.1 The Design Professional may authorize Supplemental Instructions for minor changes in the Work as provided in Paragraph 7.4, provided there is no material change to the time, cost, specification or scope of the Work.

4.2.9 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.

4.2.10 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.

4.2.11 Subject to the claims procedures set forth in Paragraph 4.3, 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 4.2, 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.

4.2.12 Interpretations and decisions of the Design Professional will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and initial decisions, the Design Professional will make all reasonable efforts to secure faithful performance by both the Owner and the Contractor and will not show partiality to either, and will not be liable for results or interpretations or decisions so rendered in good faith.

4.2.13 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.

4.3 CLAIMS AND DISPUTES

4.3.1 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, 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.

4.3.2 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.

4.3.3 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.

4.3.4 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 **twenty-one (21) 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.

4.3.5 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 10.6.

4.3.6 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 4.3.

4.3.7 CLAIMS FOR ADDITIONAL TIME

4.3.7.1 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.

4.3.7.2 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.

4.3.8 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.

4.3.8.1 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.

4.3.9 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.

4.3.10 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:

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
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 4.3.10 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

4.4 RESOLUTION OF CLAIMS AND DISPUTES

4.4.1 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 10.5, 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.

4.4.2 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.

4.4.3 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.

4.4.4 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.

4.4.5 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.

4.4.6 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.

4.4.7 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.

4.5 MEDIATION

4.5.1 Any Claim arising out of or related to the Contract, except those waived as provided for in Subparagraph's 4.3.10, 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.

4.5.2 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.

4.5.3 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.

4.6 ARBITRATION

4.6.1 Any Claim arising out of or related to the Contract, except those waived as provided for in Subparagraphs 4.3.10, 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 4.5.

4.6.2 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.

4.6.3 A Demand for Arbitration shall be made within the time limits specified in Subparagraphs 4.4.6 and 4.6.1 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 13.7.

4.6.4 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.

4.6.5 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.

4.6.6 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.

ARTICLE 5 SUBCONTRACTS

5.1 DEFINITIONS

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.

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after Notice of Intent to Award, shall furnish in writing to the Owner through the Design Professional the names of entities and key personnel (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. 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 requirements of this Subparagraph 5.2.1 shall supplement Subcontractor listing at bid as required by §13-4-34 NMSA 1978.

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.

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.

5.2.4 The Contractor shall not change a Subcontractor, person or entity previously selected if the Owner or Design Professional makes reasonable objection to such substitute. Any substitutions of a Subcontractor will comply with the New Mexico Subcontractor Fair Practices Act to the extent that the Subcontractors Fair Practices Act is applicable.

5.3 SUBCONTRACTUAL AND SUPPLIER RELATIONS

5.3.1 By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the 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.

5.3.2 Nothing contained in Subparagraph 5.3.1 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.

5.3.3 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:

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
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 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 4.3.

6.1.2 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 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 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 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 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 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 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 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 3.14.

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 Modification / Change Request, or by Supplemental Instruction for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

7.1.2 Any material change in the Work require a Modification / Change Request (MCR) that has been finalized by agreement by the Owner and based on proposal from the Contractor and recommendation of the Design Professional. A Change Order, required to modify the Purchase Order, shall accumulate approved MCRs, and must be approved by the Owner, Contractor and Design Professional. Supplemental Instruction for a minor change in the Work, will not create cost or time effect on the Project in accordance with Subparagraph 7.4.1, and may be issued only by the Design Professional.

7.1.3 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 Modification / Change Request or Supplemental Instruction.

7.2 MODIFICATION / CHANGE REQUEST

7.2.1 A Modification / Change Request or MCR is a written document that may be initiated by the Contractor, Design Professional or Owner that identifies why there is a potential change in the Work that may require an adjustment, to the Contract Sum or Contract Time, or both, and suggests how that the change should take place. Following the initiation of a MCR by one of the parties, the Owner:

1. must agree to MCR's content and feasibility and if in agreement may authorize the MCR to; proceed with estimates of costs only; or proceed with the Work with estimates of costs to follow in accordance with Subparagraph 7.2.4;
2. will consider proposal(s) from the Contractor in accordance with Article 7 for adjustment to Contract Sum or Contract Time, if any; and,

3. shall authorize the Work to proceed if not previously authorized in accordance with Subparagraph 7.2.4 and authorize adjustment to Contract Sum in accordance with Paragraph 7.2 or, shall reject the MCR and replace with another or, stop all action on the MCR.

7.2.1.1 A MCR is required for any modification or change in the Work that:

1. may affect the Contract Sum or Time;
2. alters the Work by substitution or any other way not considered minor as defined by Paragraph 7.4; or,
3. otherwise materially affect the Work or intended function of the Project including a change to aesthetics.

7.2.1.2 A MCR when finalized by Owner approval, may modify the Contract without invalidating the Contract and may order changes in the Work within the general scope of the Contract with Contract Sum and Contract Time. Owner approval of a MCR:

1. shall adjust the Contract Sum accordingly; and,
2. will begin Owner consideration of related adjustment to Contract Time, if any;
3. and shall be included into a Change Order upon approval of the parties in accordance with Paragraph 7.3.

7.2.2 A MCR shall be used to:

1. approve a modification or change to the Work;
2. accumulate data such as cost and time impacts before authorizing a modification or change to the Work;
3. direct Work to be done with cost, time, etc. to follow in the absence of total agreement on the terms of a modification or change to the Work or to prevent delay of the Work; and,
4. stop all action on a proposed modification or change to the Work.

7.2.3 If Work defined by a MCR requires an adjustment to Contract Sum or Contract Time, the Contractor shall, within **ten (10) days** of the date of Owner issuance of MCR or delivery of MCR to Contractor if that date is later, prepare and deliver to the Design Professional a proposal for such adjustment based on:

1. unit prices or lump sum allowances stated in the Contract Documents;
2. unit price or lump sum determined in accordance with Subparagraph 7.2.5;
3. provision in the MCR as determined by the Owner and in accordance with Subparagraph 7.2.5; or,
4. a manner agreed upon by the parties and consistent with Subparagraph 7.2.5 and these General Conditions.

7.2.4 Upon receipt of a Modification / Change Request authorized by the Owner to "Proceed with the Work with costs to follow", 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.

7.2.5 Allowable Costs and Fees: If a proposal to adjust the Contract Sum exceeds \$200 and if not otherwise provided in the MCR or Contract Documents, the Contractor, shall provide an itemized accounting* together with appropriate supporting data that include :

1. quantities and unit costs of materials, including cost of transportation, whether incorporated or consumed;
2. quantities and unit costs of labor, including labor burdens such as social security and unemployment insurance, fringe benefits such as health insurance required by agreement or custom (Labor Burdens shall not include retirement plans qualified by minimum employment time, organizational fees or dues, legal or related expenses, information technology training and the like);
3. quantities and unit utilization or rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
4. quantities and unit costs of on-site supervision and field office personnel directly attributable to production of the change and not included in Subparagraph 7.2.5.6;
5. quantities and unit costs of and insurance, use tax or similar related to the Work;
6. Overhead and Profit**;
7. quantities and unit premiums for all bond costs and permit fees on items 1 through above; and,
8. RESERVED: Refer to PSFA Memo dated June 13, 2017

7.2.6 Time-and-Material: If for the purpose of authorizing Work to proceed upon issuance on an MCR prior to the Owner receiving proposal of costs, so that labor or material costs are to be accumulated for later inclusion into a proposal to adjust the contract sum, the MCR must clearly state conditions and limitations of time-and-material work to proceed under the change in Work with costs to follow provision of the MCR. At a minimum, the MCR shall state the maximum allowable cost. In addition, the Daily Job Report must reflect all appropriate detail on related Work, such as work performed that day, number of workers, materials received and similar. 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, and must be signed-off daily by an individual, agreed upon in the MCR, that may be the Project Superintendent. In accordance with this Paragraph 7.2, proposal of costs shall be delivered by the Contractor within Ten (10) days of issuance of MCR.

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 a 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 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:

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
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 4.3.

7.2.12 Partial agreement of an adjustment to Contract Sum or Contract Time relative to a 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; MCR shall be broken into separate parts with alpha suffixes such as MCR 2A, MCR 2B and so on.

7.2.13 Periodically, approved MCR's 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:

1. change in the work as made by finalized Modification / Change Request(s) that has been previously approved by the Owner or authorized in accordance with Sub-paragraphs 7.2.8 or 7.2.9.;
2. amount of the adjustment, if any in the Contract Sum resultant of approved MCR(s);
3. extent of the adjustment, if any, in the Contract Time related to approved MCR(s); or,
4. if disagreement on adjustment in the Contract Time, parties agree to postponement of inclusion of any adjustment to Contract Time into a Change Order; however, all Contractor proposed or Owner offered adjustment(s) to time shall be incorporated into a Change Order prior to Substantial Completion in accordance with Subparagraph 9.8.6.

POSTPONEMENT OF ADJUSTMENT TO CONTRACT TIME LANGUAGE:

"At the time of this Change Order, there is no agreement on adjustment to the Contract Time related to MCR(s) XX, XX, XX and XX. 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."

7.3.2 Methods used in determining adjustments to the Contract Sum include those listed in Paragraph 7.2. Proposals submitted that do not follow the requirements under Paragraph 7.2 will be returned to be resubmitted prior to processing.

7.4 MINOR CHANGES IN THE WORK

7.4.1 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.

ARTICLE 8 TIME

8.1 DEFINITIONS

8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

8.1.2 The date of commencement of the Work is the date established in the Agreement.

8.1.3 The date of Substantial Completion is the date certified by the Design Professional in accordance with Paragraph 9.8.

8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

8.2 PROGRESS AND COMPLETION

8.2.1 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.

8.2.2 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 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. Unless the date of commencement is established by the Contract Documents, a Notice to Proceed shall be given by the Owner that shall establish the commencement of the Contract Time as provided by the Contract Documents.

8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

8.2.4 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 4.3.

8.4 CONTRACT TIME AND LIQUIDATED DAMAGES

8.4.1 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. 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 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 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 Before the first Application for Payment, the Contractor shall submit to the Design Professional a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Design Professional may require. Support data shall include accounting of all Project costs distributed to Level 2 UniFormat™ convention. The schedule of values, upon acceptance by the Design Professional with the Owner's prior approval, shall be used as a basis for reviewing the Contractor's Application for Payment.

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 an MCR requesting an adjusted amount on balance to complete the Contract.

9.2.1.2 If Public Schools Capital Outlay Public School Facilities Authority (PSFA) funding is provided to the Project, individual line items of the Schedule of Values shall be allocated to the various portions of the PSFA Work, prepared in such form and supported by such data to substantiate its accuracy as the Design Professional and the PSFA may require.

9.2.2 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" to provide a value consistent with and appropriate to required documentation provisions throughout the Contract including those required by Subparagraph 4.2.4.3 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 and 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
501,001 - 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

9.2.2.1 If requested in writing by the Contractor, and in the sole opinion of the Owner, the Contractor is in full compliance with the documentation requirements of the Contract including the provisions of Subparagraph 4.2.4.3, the Documentation and Close-Out Schedule of Value line item may be reduced each month prior to Substantial Completion up to five percent (5%) of the originally scheduled amount or one thousand dollars (\$1,000), whichever is greater, providing that the Documentation and Close-Out line item is not reduced to less than fifty percent (50%) of the original amount required until which time that Close-Out is complete as required by Paragraph 9.10.

9.3 APPLICATIONS FOR PAYMENT

9.3.1 No later than the 25th of each month, the Contractor shall submit to the Design Professional an itemized Application for Payment for operations completed in accordance with the Schedule of Values for that month. 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 3.10.1.

9.3.1.1 No Application for Payment may include more than:

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;
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 co-insured, 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 Application for Payment must be submitted to the Design Professional no later than the 25th of the month for which the application is being made. The Design Professional will review with the Owner the accuracy and appropriateness of the application and, within **five (5) 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. In no event will the Owner accept or process a Certification for Payment received after the 10th of the month following the month for which the application is being made. Certifications for Payment received after the 10th of the month "owner-cut-off-date" will be processed along with the following month's applications and will not be considered in default of the provisions of Subparagraph 9.4.3,

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, that the Work has progressed to the point indicated and that, to the best of the Design Professional's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents and that As-Built drawings are current to actual Work completed. The foregoing representations are subject to an 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 **five (5) days** allowed the Design Professional for review in Subparagraphs 4.2.5 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 3.3.2, because of:

1. defective Work not remedied;
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;
3. failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
4. reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
5. damage to the Owner or another contractor;
6. reasonable evidence that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
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 promptly pay each Subcontractor and supplier, upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained, if any, from payments to the Contractor on account of such Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments in a similar manner. It is the Contractor's responsibility to comply with § 57-28-5(C) of the New Mexico Retainage Act, 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 Payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, or create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

9.7 FAILURE OF PAYMENT

9.7.1 If the Owner does not pay the Contractor the amount approved by the Design Professional or the Design Professional does not approve the application for payment then, within **forty-five (45) days** from the end of the progress payment period, Contractor may, upon **seven (7) additional days** written notice to the Owner and Design Professional, stop the Work until payment of the amount owing has been received. Unless Contractor's action was improper or if the amount claimed is shown not to have been due, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents. In the event of a wrongful Stop-Work, the Contractor shall remain responsible to the Owner for delivering the Project in accordance with the Contract Documents.

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 non-compliant 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..

9.8.6 Warranties shall be in accordance with this Subparagraph 9.8.6 and Paragraph 12.2 and shall include all components and equipment required by the Contract Documents. All Work shall be warranted for the greater of:

1. a minimum of one (1) year from the date of Substantial Completion;
2. one (1) year from the date of first installation in accordance with Subparagraph 12.2.2.2;
3. 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;
4. that required by the Contract Documents; or,
5. that provided in the Certificate of Substantial Completion that will become an addendum to the Contract.

Owner and Contractor may, by mutual agreement, amend the Contract at Substantial Completion to include Performance Bonding, extended warranty, on-site maintenance, subsequent testing, scheduled replacement or other mutually agreeable terms.

9.8.7 Any postponement(s) of inclusion(s) of adjustment(s) to Contract Time in accordance with Subparagraph 7.3.1.4 shall be included into a MCR for agreement and then into a Change Order prior to Certificate of Substantial Completion. If the Contractor and the Owner do not agree on Contractor proposal, the Design Professional on the basis of evidence that critical path of work flow was reduced or expanded attributable to the change(s) in the Work with evidence being differences in Contractor's initial and current schedules and other evidence, shall make an determination for purpose of settlement of dispute. That determination of adjustment to the Contract Time shall be presented to the Owner and the Contractor for consideration. When the Owner and Contractor agree with the determination made by the Design Professional concerning the adjustments in the Contract Time such agreement shall be effective immediately, upon Contractor's written approval, and shall be recorded by preparation and execution of an appropriate MCR that shall be approved by the Owner. If after **five (5) days** the Owner or Contractor cannot agree with the determination made by the

Design Professional regarding adjustment to Contract Time, then the Design Professional may order the preparation and execution of an appropriate MCR and:

1. if the Contractor is in disagreement, the MCR shall be recorded as approved by the Owner to be included in a Change Order;
2. if the Owner is in disagreement, the MCR shall be recorded as "approved by dispute resolution authority of the Design Professional" in accordance with this Subparagraph 9.8.7 to be included into a Change Order; and,
3. either approval shall be subject to the right of either party to disagree and assert a claim in accordance with Article 4.

9.8.8 Liquidated Damages shall be determined in accordance with Paragraph 8.4.

9.8.9 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 Clause 11.4.1.3 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. 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.

9.9.2 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.

9.9.3 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:

1. Substantial Completion in accordance with Paragraph 9.8;
2. Work associated with Punch List(s);
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;
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;
5. As-Built drawings delivered in accordance with Subparagraph 3.11.1;
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;
7. delivery of all warranties required by the Contract Documents;
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. up-loading of all Close-Out documents into CIMS including scans of Building Code Approvals and other code certifications, Substantial Completion documents, Punch Lists, Warranties, O&M Manuals, Training Sign-off, Extra Stock Sign-off, Final Completion documents, and Equipment inventory information as required in Division 01.

Exception: Up-loading of Final Completion documents shall be loaded into CIMS within **seven (7) days** of availability.

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. 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.

9.10.3 The balance at Substantial Completion of the Schedule of Values line item for Documents and Close-Out in accordance with Subparagraph 9.2.2 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:

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;
2. 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;
3. 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;
4. consent of surety, if any, to final payment;
5. releases and waivers of claims of all Subcontractors, and suppliers; and,
6. 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:

1. Claims, security interests or encumbrances arising out of the Contract and unsettled;
2. failure of the Work to comply with the requirements of the Contract Documents; or
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.

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:

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;
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;
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
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 report in writing to the Owner and the Design Professional within **five (5) days** of an accident arising out of or in connection with the Work which caused lost time injury, personal injury, death or property damage, giving full details and statements of any witnesses. In cases of serious bodily injury, death or serious property damage, Contractor shall immediately contact the proper authorities, as well as, Owner and Design Professional by the most expeditious means.

10.3 HAZARDOUS MATERIALS

10.3.1 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 in writing.

10.3.2 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. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. The Contract Time adjusted as provided in Article 7. "Rendered Harmless"

shall mean that the levels of such materials are less than any applicable exposure levels, including but not limited to EPA regulations.

10.4 The Owner shall not be responsible under Paragraph 10.3 for materials and substances brought to the site by the Contractor.

10.5 If, without negligence on the part of the Contractor, the Contractor is held liable for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Contract shall be equitably adjusted in accordance with Article 7.

10.6 EMERGENCIES

10.6.1 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 4.3 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:

1. claims under Workers' Compensation, Disability Benefit and other similar Employee Benefit Acts, which are applicable to the Work to be performed;
2. claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
3. claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
4. claims for damage for personal injury;
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;
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;
7. claims for bodily injury or property damage arising out of completed operations; and
8. claims involving contractual liability insurance applicable to the Contractor's obligations under Paragraph 3.18.

Provision of insurance does not limit the liability of the Contractor under 3.18.1 herein.

11.1.2 The Contractor shall ensure that liability insurance is maintained in accordance with Article 11 and may, at Contractor's option, 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 insurance required by Subparagraph 11.1.1 shall be written for not less than limits of liability specified herein or required by law, whichever coverage is greater. 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.

11.1.4 Certificates of Insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work. These certificates and the insurance policies required by this Paragraph 11.1 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** prior written notice has been given to the Owner. If any of the foregoing insurance coverages are requested to remain in force after final payment and are reasonably available, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment as required by Subparagraph 9.10.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both shall be furnished by the Contractor with reasonable promptness.

11.1.4.1 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. The Certificates of Insurance shall be in the appropriate ACORD form, or similar format acceptable to the Owner and shall include the following statements:

1. "The State of New Mexico, the *(the name(s) of the Owner whose name(s) appear on the Agreement)*, its agents, servants and employees are recognized as Additionally Insured."
2. "The insurance coverage certified herein will not be canceled or materially changed, except after **forty-five (45) days** written notice has been provided to the Owner"
3. "The insured will not violate, or permit to be violated, any conditions of this policy, and will at all times satisfy the requirements of the insurance company transacting the policy."
4. "The coverage provided by this certificate is primary."
5. "Nothing in this certificate of coverage will be construed to affect the State of New Mexico or owner, agents, servants and employees defenses, immunities or limitations of liability under the New Mexico Tort Claims Act."

11.1.5 Minimum Required Coverages:

11.1.5.1 Worker's Compensation Insurance shall be provided as required by applicable State 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 11.1.5.1 will subject this Contract to termination.

11.1.5.2 Public Liability Insurance shall not be less than the liability amounts set forth in the New Mexico Tort Claims Act, §41-4-1 et seq. NMSA 1978, as it now exists or may be amended.

11.1.5.3 Comprehensive Vehicle Liability Insurance, for both owned and non-owned vehicles, shall be one million dollars (\$1,000,000) per occurrence combined single limit for both personal injury and property damage.

11.2 OWNER'S LIABILITY INSURANCE

11.2.1 The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

11.3 PROJECT MANAGEMENT PROTECTIVE LIABILITY INSURANCE

11.3.1 Optionally, the Owner may provide Project Management Protective Liability Insurance, otherwise known as Project Insurance, as primary coverage for the Owner's, Contractor's and Design Professional's vicarious liability for construction operations under the Contract. The minimum limits of liability purchased with such coverage shall be equal to the limits required for Contractor's Liability Insurance under Clauses 11.1.1.2 through 11.1.1.5.

11.3.2 To the extent damages are covered by Project Management Protective Liability insurance, the Owner, Contractor and Design Professional waive all rights against each other for damages, except such rights as they may have to the proceeds of such insurance. The policy shall provide for such waivers of subrogation by endorsement or otherwise.

11.4 PROPERTY INSURANCE

11.4.1 Unless Builder's Risk coverage is furnished by the Owner as indicated in Paragraph 7.2 of the Agreement between the Owner and the Contractor, the Contractor shall provide insurance which will protect the interests of the Contractor and Subcontractors in the Work. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until Final Payment has been made as provided in Paragraph 9.11 or until no person or entity other than the Owner has an insurable interest in the property required by this Paragraph 11.4 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, and Subcontractors in the Project.

11.4.1.2 This property insurance may not cover portions of the Work stored off the site or any portions of the Work in transit. Insurance covering Work or materials stored off site shall be in accordance with sub-paragraph 9.3.2.

11.4.1.3 Partial occupancy or use in accordance with Paragraph 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written

consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

11.4.2 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.

11.4.3 Loss of Use Insurance. The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

11.4.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Modification / Change Request Change Order.

11.4.5 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site, by property insurance under policies separate from those insuring through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive rights in accordance with the terms of Subparagraph 11.4.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

11.4.6 Before an exposure to loss may occur, the Contractor may review any Owner provided insurance required by this Paragraph 11.4. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least **thirty (30) days** prior written notice has been given to the Contractor.

11.4.7 Waivers of Subrogation. The Owner and Contractor waive all rights against each other and any of their subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Paragraph 11.4 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner. The Owner or Contractor, as appropriate, shall require of the Design Professional, Design Professional's consultants, separate contractors described in Article 6, if any, and the subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity that would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged. The provisions of this paragraph shall not include claims with respect to damages to non-work buildings or properties

11.4.7.1 The provisions of Paragraph 11.4.7 shall not be effective as to a person or entity whose acts or failures to act cause the harm and rise to a level beyond mere negligence.

11.4.8 A loss insured under Owner's property insurance shall be adjusted by the Owner and made payable to the Owner for the insured's, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Subparagraph 11.4.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity.

11.4.9 The Owner shall distribute in accordance with such agreement as the parties in interest may agree, or in accordance with an arbitration award in which case the procedure shall be as provided in Paragraph 4.6. If after such loss, no other special agreement is made, and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

11.4.10 The Owner shall have power to adjust and settle a loss with insurers.

11.5 PERFORMANCE BOND AND PAYMENT BOND

11.5.1 If the contract price exceeds \$25,000, the Contractor shall furnish Labor, Material and Performance surety bonds covering faithful performance of the Contract in amounts not less than 100 percent of the Contract amount, exclusive of GRT, unless Owner or the Contract Documents require a lesser percentage, for payment of obligations arising there under. These Labor, Material and Performance bonds shall be delivered to the Owner within **seven (7) days** of the Notice of Award or evidence satisfactory to the Owner that such bonds are forthcoming. Said bonds must comply with the requirements of §13-4-18, NMSA 1978. If the amount of the Sum of the Work is increased, the amounts of the bonds shall be increased accordingly.

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.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

12.1 UNCOVERING OF WORK

12.1.1 If a portion of the Work is covered 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 the Contractor's obligations under Paragraph 3.5, if within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Subparagraph 9.8.6, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one year period for correction of the Work, if the Owner fails to notify the Contractor and gives the Contractor an opportunity to make the correction, the Owner waives the rights to require the correction by Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within reasonable time during that period after receipt of notice from the Owner or Design Professional, the Owner may correct it in accordance with Paragraph 2.4.

12.2.2.2 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 and in accordance with all other requirements of Subparagraph 9.8.6.

12.2.2.3 The one-year period for correction of Work shall be extended by corrective Work performed by the Contractor pursuant to this Paragraph 12.2 and Sub-paragraph 9.8.6.

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 this 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 The Owner's total liability to Contractor or any other entity claiming by, through, or under Contractor for any Claim, cost, loss, expense or damage caused in part by the fault of the Owner and in part by the fault of the contractor or any other entity or individual shall not exceed the percentage share that Owner's fault bears to the total fault of Owner, Contractor and all other entities and individuals as determined on the basis of comparative fault principles.

13.1.3 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 Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to the other party hereto and to partners, successors, assigns and legal representatives of such other party in respect to covenants, that party shall nevertheless remain legally responsible for all obligations under the Contract.

13.2.2 The Owner may, without consent of the Contractor, assign the Contract to an institutional lender providing construction financing for the Project. In such event, the lender shall assume the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

13.2.3 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.

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 2.2.4 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 and inspections and approvals are to be made so that the Design Professional may be present for such procedures. The Owner shall bear costs of tests, inspections or approvals which do not become requirements until after bids are received or negotiations concluded.

13.5.2 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 INTEREST

13.6.1 Payments due and unpaid undisputed amounts, under the Contract Documents, shall bear interest from the date payment is due in accordance with State statute regulating prompt payment.

13.7 COMMENCEMENT OF STATUTORY LIMITATION PERIOD

13.7.1 As between the Owner and Contractor:

1. before Substantial Completion. As to acts or failures to act occurring prior to the relevant date of Substantial Completion, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than such date of Substantial Completion;
2. between Substantial Completion and Final Certificate for Payment. As to acts or failures to act occurring subsequent to the relevant date of Substantial Completion and prior to issuance of the final Certificate for Payment; and
3. after Final Certificate for Payment. As to acts or failures to act occurring after the relevant date of issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of any act of failure to act by the Contractor pursuant to any Warranty provided under Subparagraph 9.8.6, Paragraph 12.2, or the date of actual commission of any other act or failure to perform any duty or obligation by the Contractor or Owner, whichever occurs last.

13.8 EMPLOYMENT

13.8.1 Equal Employment Opportunity

13.8.1.1 The Contractor agrees not to discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin or other in accordance with U.S. Executive Order 11246, as amended, and NM Executive Order 85-15. The Contractor and Subcontractors agree to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of nondiscrimination. and shall in all solicitation or advertisement for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex or national origin.

13.8.1.2 If the Contract constitutes a federally assisted construction contract within the meaning of 41 CFR 60-1.3 (1987), then the equal opportunity clause of 41 CFR 60-1.4(b) is incorporated herein by reference.

13.8.2 Wage Rates

13.8.2.1 For Contracts in excess of \$60,000, minimum wages will be paid as determined by the Department of Workforce Solutions in accordance with §50-4-20 to 50-4-30 NMSA 1978, entitled "Minimum Wage Act" The Contractor and Subcontractors shall deliver or mail copies of the certified weekly payrolls, prepared in accordance with regulations, to the Labor Commission and to the Design Professional.

13.8.2.2 The scale of wages to be paid will be posted by the Contractor in a prominent and easily accessible place on the job site.

13.8.3 Apprentices

13.8.3.1 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.

13.8.4 On-the-Job Relations with Contractor

13.8.4.1 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 13.8.4.1, shall upon the Owner's decision, be cause to immediately stop the Work in accordance with Paragraph 14.2.

13.8.5 Employee Background Checks

13.8.5.1 The Contractor shall be responsible for complying with the provisions of §22-10.3.3.B NMSA 1978, regarding employees' having unsupervised access to students. In the event that §22-10.3.3.B NMSA 1978 applies, and upon prior approval by the Owner, reasonable costs for background checks shall be reimbursed without mark-up or fee.

13.9 Records

13.9.1 In the even 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 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:

1. issuance of an order of a court or other public authority having jurisdiction which requires all Work to be stopped;
2. an act of government, such as a declaration or national emergency which requires all Work to be stopped;
3. because 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
4. the owner has failed to furnish to the Contractor promptly, upon the Contractor's written request, reasonable evidence as required by Subparagraph 2.2.1.

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:

1. refuses or fails to supply enough properly skilled workers or proper materials;
2. fails to make payment to Subcontractors for material or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
3. disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction;
4. disregards the authority of the Owner or Design Professional;
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;
6. fails to maintain owner approved schedule or owner approved recovery schedule; and,
7. otherwise is guilty of substantial breach of a provision of the Contract Documents.

14.2.2 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:

1. take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
2. accept assignment of subcontracts pursuant to Paragraph 5.4; and
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 When the Owner terminates the Contract for one of the reasons stated in Subparagraph 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

14.2.4 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. 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 as the case may be, shall be certified by the Design Professional, upon application, and this obligation for payment shall survive termination of the Contract.

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 BY 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.

14.3.2 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 Subparagraph 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent:

1. that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or
2. that an equitable adjustment is made or denied under another provision of the Contract.

14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall:

1. cease operation as directed by the Owner in the notice;
2. take action necessary, or that the Owner may direct, for the protection and the preservation of the Work; and
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.

14.4.3 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.

**SECTION 00 7300
SUPPLEMENTARY CONDITIONS**

MODIFICATIONS TO GENERAL CONDITIONS

1.1 Add the following lines to paragraph 3.10.1:

- Indicate columns for early start, early finish, late start, late finish, and float time for each activity.
- Show critical path items.
- Show submittal dates required for Shop Drawings, Product Data and Samples, and product delivery dates, including those furnished by Owner those under Allowances.

1.2 Add the following sub-paragraph 9.2.1.2:

- Itemize separate line item cost for each of the following:
- Performance and Payment bond
- General conditions
- Close-out Documents (reference paragraph 9.2.2 of the general conditions)
- Allowance (reference section 01 21 00)
- Break down each line with a value of \$25,000.00, listing major products or operations and the cost of each.
- Change Orders

1.3 Add the following sub-paragraph 9.3.2.1:

1. Materials stored off-site must be located and accessible to the architect within a 20-mile radius of either the project site or the architect's office. Materials must be segregated-out and clearly labeled for the project for review by the architect. All stored material values must be supported by manufacturer/vendor invoices, the total of such invoices shall be the amounts submitted as stored materials in the contractor's pay application.
2. Off-site stored material invoices must be accompanied with Certificate(s) of Insurance for each individual stored location. All Certificates must name the Owner and the State of New Mexico (if applicable) as primary insureds.

1.4 Add the following sub-paragraph 9.6.1.1:

Applications for payment shall include:

1. Current progress schedule as described in paragraph 3.10.1 of the General Conditions.
2. Signed letter from the contractor's project manager indicating the record drawings are revised and all field modifications, supplemental instructions, and change orders are currently and accurately indicated
3. Stored materials invoices and written confirmation that all materials are stored on-site or in bonded warehouse, and certificates of insurance for such bonded warehouse indicating the school district as certificate holder and additional named insured.

1.5 Add the following sub-paragraph 9.8.2.1:

Prior to the design professional's inspection of the Work, the contractor shall thoroughly clean the Work areas. "Clean" for the purpose of this article shall be interpreted as meaning the level of cleanliness provided by commercial maintenance subcontractors using commercial building maintenance equipment and materials to ensure the Owner can accept a completely clean project. Should the Owner occupy any portion of the work prior to final acceptance, the provisions of the General Conditions of the contract shall apply.

1.6 Add the following subparagraph to Article 10.3:

10.5.1 ASBESTOS CONTAINING MATERIALS.

No materials used on this project shall contain asbestos. Contractor shall provide certificate stating that no materials containing asbestos have been used on this project. Include certificate with the close-out documents.”

1.7 Revise paragraph 11.4.1 to read:

Per paragraph 7.2 of the Agreement Between the Owner and the Contractor, the contractor shall provide Builder’s Risk Insurance which will protect the interests of the Owner, Contractor and Subcontractors in the Work. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until Final Payment has been made as provided in Paragraph 9. 11 or until no person or entity other than the Owner has an insurable interest in the property required by this Paragraph 11.4 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, and Subcontractors in the Project.

ADDITIONAL CONDITIONS

2.1 Bonds & Liability Insurance - MCR Policies Memorandum Dated June 13th, 2017
Attached

**State of New Mexico
Public School Facilities Authority**



Vacant, Director

Rocky Kearney, Deputy Director

1312 Basehart Road, SE, Suite 200
Albuquerque, NM 87106
(505) 843-6272 (Phone); (505) 843-9681 (Fax)
Website: www.nmpsfa.org

MEMORANDUM

TO: All Concerned

FROM: PSFA Procurement Services

DATE: June 13, 2017

RE: Bonds and Liability Insurance - MCR Policies

The purpose of this memorandum is to provide guidance and clarification, to promote fair and equitable treatment to all persons in reference to the application of Article 7 Section 7.2.5 inclusive of PSFA's General Conditions of the Contract for Construction.

This memorandum resolves the confusion and eliminates disparate multiple interpretations over terminology that has occurred regarding 1) MCR Markup on Bonds and Liability or Builders Risk Insurance Costs, 2) Payment for additional Liability and Builders Risk Insurance for the prime contractor, 3) Payment for additional Bonds for the prime contractor and 1st tier subcontractor, and 4) Subcontractor Markup.

No MCR Markup on Bonds and Liability or Builders Risk Insurance Costs:

MCR and Change Order cost adjustments due increases or decreases in bond or insurance costs (if applicable) shall not be subject to any Markup Percentage Fee.

Liability and Builders Risk Insurance for the prime contractor:

In the event the Prime Contractor has been required to furnish comprehensive general liability insurance and builder's risk for the duration of the project as part of the base contract price, a final contract MCR will be processed to account for the Contractor's net increase or decrease in comprehensive general liability and builder's risk insurance costs associated with MCRs to Contractor's base contract price.

Bonds for the prime contractor and 1st tier subcontractor

In the event the Prime Contractor and/or 1st tier subcontractor have been required to furnish bonds as part of the base contract price, a final contract MCR will be processed to account for the Contractor's net increase or decrease in bond.

State of New Mexico Public School Facilities Authority



Vacant, Director

Rocky Kearney, Deputy Director

1312 Basehart Road, SE, Suite 200
Albuquerque, NM 87106
(505) 843-6272 (Phone); (505) 843-9681 (Fax)
Website: www.nmpsfa.org

Subcontractor Markup:

Subcontractors can only markup self-performed work and not work performed by other subcontractors regardless of tier.

1st tier Subcontractors that do not self-perform work but pass through work to a 2nd tier subcontractor are allowed a markup on the 2nd tier subcontractor as follows.

Subtotal before applying overhead and profit	Under \$2000	\$2001 to \$10,000	\$10,001 to \$50,000	Over \$50,001
Subcontractor Pass-through markup 1st tier to 2 nd tier	Not to exceed 4% of the subtotal amount prior to applying subcontractor allowed markup.	Not to exceed 3% of the subtotal amount prior to applying subcontractor allowed markup.	Not to exceed 2% of the subtotal amount prior to applying subcontractor allowed markup.	Not to exceed 1% of the subtotal amount prior to applying subcontractor allowed markup for the first \$100,000 Above \$100,000 negotiated %.

No pass through markup is allowed from 2nd tier to 3rd tier or below.

INSTRUCTIONS:

The State Minimum Wage Rate Determination and related documents issued for this specific project follow.

NOTE: Not required if project is less than \$60,000 (effective June 17, 2005)

Wage Rate Determination follows this page

**LABOR RELATIONS DIVISION**

401 Broadway NE
Albuquerque, NM 87102
Phone: 505-841-4400
Fax: 505-841-4424

226 South Alameda Blvd
Las Cruces, NM 88005
Phone: 575-524-6195
Fax: 575-524-6194

WWW.DWS.STATE.NM.US

1596 Pacheco St, Suite 103
Santa Fe, NM 87505
Phone: 505-827-6817
Fax: 505-827-9676

Wage Decision Approval Summary

1) Project Title: Mesa Height Subdivision - Teacher Housing
Requested Date: 10/08/2020
Approved Date: 10/09/2020
Approved Wage Decision Number: SJ-20-2041-A/C

Wage Decision Expiration Date for Bids: 02/06/2021

2) Physical Location of Jobsite for Project:
Job Site Address: Mesa School Road
Job Site City: Shiprock
Job Site County: San Juan

3) Contracting Agency Name (Department or Bureau): Central Consolidated School District
Contracting Agency Contact's Name: Waynette Danley
Contracting Agency Contact's Phone: (505) 598-4561 Ext.

4) Estimated Contract Award Date: 12/01/2020

5) Estimated total project cost: \$3,000,000.00

a. Are any federal funds involved?: No

b. Does this project involve a building?: Yes - New construction: 7 ea 2-bedroom, 1200 SF homes and 2ea 3-bedroom, 1440 SF homes. Utilities, home landscaping, and streets for the first phase of the project

c. Is this part of a larger plan for construction on or appurtenant to the property that is subject to this project?: Yes - Development of a 32 home subdivision for school district teacher housing to include 2 and 3 bedroom homes. Project includes homes, utilities, streets, landscaping, and neighborhood community playground area.

d. Are there any other Public Works Wage Decisions related to this project?: No

e. What is the ultimate purpose or functional use of the construction once it is completed?: Housing for district staff

6) Classifications of Construction:

Classification Type and Cost Total	Description
Highway/Utilities (A) Cost: \$900,000.00	Paved residential streets with solar street lights. Water, sewer, and gas utility lines. Concrete curb and sidewalks.
Residential (C) Cost: \$2,100,000.00	New construction. Single 2 (1200 square foot) and 3 bedroom (1440 square foot) units on concrete slab, wood frame, standing seam roof, stucco exterior, painted interior, 1 or 2 bath, central air/heat, Each home to have living room, kitchen/dining room, utility room, 2 or 3 bedrooms, 1 or 2 bathrooms, patio area, covered entry porch, concrete driveway, privacy backyard fence, and natural-to-the area vegetation and trees



TYPE "A" - STREET, HIGHWAY, UTILITY & LIGHT ENGINEERING

Effective January 1, 2020

Trade Classification	Base Rate	Fringe Rate
Bricklayer/Block layer/Stonemason	24.46	8.81
Carpenter/Lather	24.63	11.24
Carpenter- Los Alamos County	27.80	13.19
Cement Mason	17.42	6.81
Ironworker	27.00	15.75
Painter- Commercial	17.00	6.88
Plumber/Pipefitter	30.76	11.62
Electricians- Outside Classifications: Zone 1		
Ground man	23.27	12.67
Equipment Operator	33.39	15.35
Lineman/ Technician	39.28	16.91
Cable Splicer	43.21	17.95
Electricians-Outside Classifications: Zone 2		
Ground man	23.27	12.67
Equipment Operator	33.39	15.35
Lineman/ Technician	39.28	16.91
Cable Splicer	43.21	17.95
Electricians-Outside Classifications: Los Alamos		
Ground man	23.94	12.85
Equipment Operator	34.35	15.60
Lineman/ Technician	40.41	17.21
Cable Splicer	44.45	18.28
Laborers		
Group I- Unskilled	12.26	6.22
Group II- Semi-Skilled	12.56	6.22
Group III- Skilled	12.96	6.22
Group IV- Specialty	13.21	6.22
Operators		



Group I	18.79	6.34
Group II	19.72	6.34
Group III	19.82	6.34
Group IV	19.93	6.34
Group V	20.03	6.34
Group VI	20.21	6.34
Group VII	20.37	6.34
Group VIII	20.66	6.34
Group IX	28.16	6.34
Group X	31.41	6.34
Truck Drivers		
Group I-IX	16.45	7.87

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.



Type "C" - RESIDENTIAL

Effective January 1, 2020

Trade Classification	Base Rate	Fringe Rate	Apprenticeship
Asbestos workers/Heat & Frost Insulators	32.26	12.06	0.60
Asbestos workers/Heat & Frost Insulators-Los Alamos County	34.69	12.06	0.60
Boilermaker	21.77	3.98	0.60
Bricklayer/Block layer/Stonemason	24.46	8.81	0.60
Carpenter/Lather	24.63	11.24	0.60
Carpenter- Los Alamos County	27.80	13.19	0.60
Cement Mason	17.96	9.73	0.60
Electricians-Outside Classifications: Zone 1			
Ground man	23.27	12.67	0.60
Equipment Operator	33.39	15.35	0.60
Lineman/Tech	39.28	16.91	0.60
Cable Splicer	42.21	17.95	0.60
Electricians-Outside Classifications: Zone 2			
Ground man	23.27	12.67	0.60
Equipment Operator	33.39	15.35	0.60
Lineman/ Technician	39.28	16.91	0.60
Cable Splicer	42.21	17.95	0.60
Electricians-Outside Classifications: Los Alamos			
Ground man	23.94	12.85	0.60
Equipment Operator	34.35	15.60	0.60
Lineman/ Technician	40.41	17.21	0.60

Cable Splicer	44.45	18.28	0.60
Electricians-Inside Classifications: Zone 1			
Wireman/ low voltage technician	32.70	11.18	0.60
Cable Splicer	35.97	11.28	0.60
Electricians-Inside Classifications: Zone 2			
Wireman/ low voltage technician	35.64	11.27	0.60
Cable Splicer	38.91	11.37	0.60
Electricians-Inside Classifications: Zone 3			
Wireman/ low voltage technician	37.61	11.33	0.60
Cable Splicer	40.88	11.43	0.60
Electricians-Inside Classifications: Zone 4			
Wireman/ low voltage technician	41.20	11.44	0.60
Cable Splicer	44.47	11.53	0.60
Electricians-Inside Classifications: Los Alamos			
Wireman/Technician	37.61	13.21	0.60
Cable Splicer	40.88	13.47	0.60
Elevator Constructor	43.80	35.25	0.60
Elevator Constructor Helper	35.04	35.25	0.60
Glazier			
Glazier /Fabricator	20.25	5.35	0.60
Driver	9.00	5.35	0.60
Ironworker	27.00	15.75	0.60
Painter -Residential	12.00	6.88	0.60
Drywall-Light Commercial & Residential			
Ames Tool Operator	21.87	7.10	0.60
Hand Finisher/machine texture	20.87	7.10	0.60



Paper Hanger	13.00	6.88	0.60
Plasterer	19.75	7.92	0.60
Plumber/Pipefitter	30.76	11.62	0.60
Roofer	25.23	7.97	0.60
Sheet metal worker			
Zone 1	31.03	17.26	0.60
Zone 2 – Industrial	32.03	17.26	0.60
Zone 3 – Los Alamos	33.03	7.70	0.60
Soft Floor Layer	19.94	7.70	0.60
Sprinkler Fitter	30.90	22.29	0.60
Tile Setter	24.46	8.81	0.60
Tile Setter Help/Finisher	16.53	8.81	0.60
Laborers			
Group I-Unskilled and Semi-Skilled	15.75	5.93	0.60
Group II-Skilled	16.75	5.93	0.60
Group III-Specialty	17.75	5.93	0.60
Operators			
Group I	12.33	6.60	0.60
Group V	13.62	6.60	0.60
Group VII	16.74	6.60	0.60
Group VIII	18.30	6.60	0.60
Truck Drivers			
Group I-IX	20.75	6.27	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.

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For more information about the Subsistence, Zone, and Incentive Pay rates, or to file a wage claim,

SECTION 01 10 00

SUMMARY

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. General description of Work and Contractor's duties.
 - 2. Work by others.
 - 3. Work sequence.
 - 4. Contractor use of site.
 - 5. Definitions.
 - 6. Abbreviations.

1.02 RELATED DOCUMENTS

- A. General Conditions of the Contract
 - 1. Basic responsibilities and rights of Owner.
 - 2. Basic responsibilities of Contractor.
 - 3. Owner's right to award separate contracts.

1.03 WORK COVERED BY CONTRACT DOCUMENTS

- A. Site work including grading and drainage, roads, and utilities extension to support phase I construction of up to nine (9) single-family homes. Landscaping for each of nine (9) homes. Utilities extension sized for eventual construction of thirty-three (33) home subdivision.

1.04 CONTRACTOR'S DUTIES

- A. Except as noted, provide and pay for all labor, materials, and equipment.
- B. Pay required sales, gross receipts, and other taxes. Owner will pay Contractor applicable taxes including local option tax and any increase in tax becoming effective after Contract date.
- C. Secure and pay for permits, fees, and licenses necessary for execution of Work as applicable at time of receipt of bids or as otherwise required in other sections of the Specifications.
- D. Give required notices.
- E. Comply with codes, ordinances, regulations, and other legal requirements of public authorities which bear on performance of Work.
- F. Request required inspections from public authorities, correct any noted deficiencies, and obtain certifications of satisfactory inspection. Deliver certificates to Owner in accordance with Section 01 78 00 - Closeout Submittals.

1.05 WORK BY OTHERS

- A. Owner will remove existing portable buildings from site prior to commencement of construction.

1.06 WORK SEQUENCE

- A. Coordinate construction schedule and operations with Owner and Architect.

1.07 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 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.
 8. Owner reserves right to place and install equipment and furnishings in completed areas of building prior to Substantial Completion, provided such occupancy does not interfere with construction. Placing of equipment and furnishings does not constitute Substantial Completion of any portion of the Work. An inspection by Contractor, Owner and Architect shall be made prior to such limited occupancy solely for the purpose of establishing the condition of finishes and other items that might be damaged or obscured by placement and installation of Owner's items.

1.08 IDENTIFICATION OF ENTITIES

- A. Where the term "Architect" is used in the Contract Documents it is defined as the authorized representative designated by Owner and acting within the scope of the particular duties entrusted to such representative.
 1. Greer Stafford/SJCF ARCHITECTURE, Inc.
 - a. Greer Stafford Principal in Charge: Chris van Dyck
 - b. Greer Stafford Project Manager: John Giddens
 - 1) Telephone number: 505-821-0235
 - 2) E-mail address: jgiddens@greer-stafford.com
 2. Address:
 - a. Greer Stafford/SJCF ARCHITECTURE, Inc.
1717 Louisiana NE, Suite 205
Albuquerque, New Mexico 87110-7027
 3. Website: www.greer-stafford.com
- B. Where the term "Owner" is used in the Contract Documents, it is defined as:
 1. Central Consolidated School District
 2. Project Manager: Candice Thompson
 - a. Telephone number: 505-598-4561
 - b. E-mail address: thomca@centralschools.com

1.09 DEFINITIONS

- A. Refer to General Conditions for definitions of terms used within Contract Documents.
- B. Additional terms used within Specifications but not defined by General Conditions shall have the following definitions:
 1. Products: Materials, manufactured items, components, fixtures, machinery, equipment, or systems forming the Work but not including machinery, equipment, and other aids used for preparing, fabricating, conveying, and installing the Work.
 2. Supply: Furnish, deliver, and unload at Project site. Same meaning as furnish.
 3. Furnish: Supply, deliver, and unload at Project site. Same meaning as supply.
 4. Install: Operations at Project site to incorporate products into the Work such as unpacking, assembling, anchoring, erecting, applying, placing, curing, finishing, and preparing for use.
 5. Provide: To supply or furnish a product and to also install it.
 6. Execution: Operations at Project site including preparatory actions, installing, and post-installation adjusting, testing, cleaning, and demonstrating.

1.10 ABBREVIATIONS

- A. Terms and abbreviations used in the project manual and drawings comply with US National CAD standard, version 5.0. Refer to module 5 of the Uniform Drawing System for terms and abbreviations.

PART 2 - PRODUCTS

2.01 Not used.

PART 3 - EXECUTION

3.01 Not used.

END OF SECTION

SECTION 01 20 00
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes procedures for:
 - 1. Schedule of Values.
 - 2. Applications for Payment.
 - 3. Contract modifications.

1.02 RELATED DOCUMENTS

- A. Agreement between Owner and Contractor.
- B. General Conditions of the Contract:
 - 1. Procedures for Change Orders and Contingency Modification Requests.
 - 2. General procedures for Schedule of Values, Applications for Payment, Certificates for Payment, Progress Payments and Document Closeout Value.
- C. Supplementary Conditions.

1.03 SCHEDULE OF VALUES

- A. Procedures:
 - 1. Submit for review by Architect 3 copies of preliminary Schedule of Values within 7 days after date of Agreement Between Owner and Contractor.
 - 2. Revise to address review comments and resubmit.
 - 3. Final Schedule of Values: Revise Schedule to incorporate review comments and submit 3 copies at least 7 days before submittal of initial Application for Payment.
 - 4. During construction, revise and resubmit 3 copies of Schedule of Values to incorporate approved Change Orders.
 - 5. Refer to Supplementary Conditions for further requirements regarding the schedule of values.
- B. Format: Typed schedule on standard form or electronic media printout approved by Architect. Sum of all values shall equal total Contract Sum.
- C. Content: Use Project Manual Table of Contents as basis for line items. Cross reference line items with number and title of corresponding specification section. Provide sufficient detail to allow computation of values for progress payments during construction.
 - 1. Include within each line item a directly proportional amount of Contractor's overhead and profit.
 - 2. Provide separate line items for materials and for installation when materials will be stored on site prior to installation such that cost of stored materials will be included separately on an Application for Payment.
 - 3. Provide separate line items for:
 - a. Each allowance included in Contract Sum.
 - b. Each alternate selected by Owner.
 - c. Each contract modification.
 - d. Bonds.
 - e. Insurance.
 - f. Documentation and Closeout.
 - g. Mobilization.
 - h. NPDES compliance as applicable.
 - i. Each Section of this project manual.
 - j. Closeout and documentation.
 - k. Applicable taxes.

1.04 APPLICATIONS FOR PAYMENT

- A. Format: AIA Form G702 - Application and Certificate for Payment and AIA G703 or alternative form approved by Architect - Continuation Sheet or Contractor's electronic media driven form as approved by Architect.

- B. Payment period: Monthly or as otherwise stipulated in Agreement Between Owner and Contractor.
- C. Preparation:
 - 1. Use Schedule of Values for listing items in Applications for Payment.
 - 2. Complete each entry on Application of Payment form. Incomplete forms will be returned without action.
 - 3. List each authorized Change Order as a separate line item and in same format as other line items.
 - 4. Provide subtotals and total.
 - 5. Indicate total percentage of all work completed as of the date of the Application.
 - 6. Applications shall be signed and dated by authorized officer of Contractor. Signature shall be notarized.
- D. Include with Application for Payment appropriate invoices for materials stored on site.
- E. At request of Architect, provide substantiating data justifying dollar amounts in question.
- F. Submittal: Submit 3 executed copies of each Application for Payment.
 - 1. Initial Application for Payment: Submit after the following have been submitted and accepted by Architect and Owner.
 - a. Certificates of insurance required by the General Conditions of the Contract.
 - b. Copy of building permit.
 - c. Schedule of Values as required by Paragraph 1.2.A.
 - d. Progress schedule as required by Section 01 31 00 - Project Management and Coordination.
 - e. Submittal schedule as required by Section 01 33 00 - Submittal Procedures.
 - 2. Subsequent Applications for Payment:
 - a. Submit with Application of Payment:
 - 1) Include the Updated Progress Schedule specified in Section 01 31 00 - Project Management and Coordination.
 - 2) Updated Submittal Schedule specified in Section 01 33 00 - Submittal Procedures.
 - 3) Schedule Recovery Plan (if necessary)
 - 4) Signed letter from Project manager indicating the record drawings are revised and all field modifications, supplemental instructions and change orders are currently and accurately indicated.
 - b. Prior to acceptance of each Application for Payment, Architect will review Project Record Drawings specified in Section 01 78 00 - Closeout Submittals to ensure that recorded data is current.
 - 3. Application of Payment at Substantial Completion: Submit after issuance of Certificate of Substantial Completion and in accordance with Section 01 77 00 - Closeout Procedures.
 - 4. Final Application for Payment: Submit after completion of final cleaning, final inspection, final submittals, and other final completion procedures specified in Section 01 77 00 - Closeout Procedures.

1.05 CONTRACT MODIFICATION PROCEDURES

- A. Changes in the Work shall be determined and Change Orders executed in accordance the General Conditions.
 - 1. Minor changes: Architect will advise of minor changes in Work not involving adjustment to Contract Sum or Time by issuing Supplemental Instructions (ASI).
 - 2. Architect requested Change Order: Architect may issue a Proposal Request (PR) with detailed description of proposed change and supplementary drawings and specifications as required.
 - 3. Architect will prepare Change Orders to adjust Contract Sum for:
 - a. Changes in the scope of work.
 - b. Differences in costs between products purchased and cash allowances stated in Section 01 21 00 - Allowances.
 - c. Work included in change ovrders must be approved by Architect and Owner.
 - d. Change Orders may be additive or deductive to the contract amount.
 - 4. Contractor proposed Change Order: Contractor may propose change by submitting a Modification Change Request (MCR) to Architect describing proposed change, reason for change, and its effect on Contract Sum and Time. Document requested substitutions in accordance with Section 01 63 00 - Product Substitution Procedures.

5. A Modification Change Request (MCR) signed by the Owner for subsequent inclusion in a Change Order may instruct Contractor to proceed with a change in the Work. Document will describe changes and designate method of determining changes in Contract Sum and Time.
- B. Documentation: Maintain adequate records and provide full information required for evaluation of proposed changes and to substantiate costs. The Contractor shall provide:
 1. Itemized product, labor, and equipment quantities and costs.
 2. Amounts for taxes, insurance, and bonds.
 3. Overhead and profit amounts.
 4. Justification for changes in Contract Time.
 5. Documented credits for deletions.
- C. Methods for determining adjustments to Contract Sum:
 1. Stipulated sum: Based on Architect's Proposal Request (PR) and Contractor's Modification Change Request (MCR) as approved by Architect. Completed Worksheet(s) shall be provided by Contractor for each Request to facilitate checking of itemized costs and percentages.
 2. Unit prices: Computed from unit prices stated in Contract Documents or subsequently agreed upon and actual measured quantities installed.
 3. Time and material: Maintain detailed records for work performed on time and material basis. Submit itemized account and full supporting data after completion of change within stated time limitations. Architect will determine allowable change in Contract Sum and Time. Supporting data shall include that which is indicated in the General Conditions and as follows:
 - a. Names of personnel performing work.
 - b. Dates and times work was performed and by whom.
 - c. Time records and wage rates paid.
 - d. Invoices for products, equipment, and subcontracts.
- D. Revision of documents: After authorization of Change Order revise:
 1. Schedule of Values and Application for Payment forms to record each Change Order as a separate line item and adjust Contract Sum and Time.
 2. Progress Schedules to reflect changes in Contract Time and to adjust times for other work items affected by changes. Resubmit revised schedule.
 3. Record changes in Project Record Documents.

PART 2 PRODUCTS

2.01 Not used.

PART 3 EXECUTION

3.01 Not used.

END OF SECTION

SECTION 01 31 00
PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 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.
 - d. Progress schedule.

1.02 RELATED DOCUMENTS

- A. General Conditions: Contractor's schedules, logs, meetings and reports.
- B. Instructions to Bidders: Pre-Bid Conference.
- C. Section 01 10 00 - Summary.
- D. Section 01 40 00 - Quality Requirements:
- E. Section 01 50 00 - Temporary Facilities and Controls.

1.03 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 - Submittal Procedures:
- B. Site mobilization plan (See Section 01 50 00 and General Conditions).
 - 1. Submit for Owner's approval prior to start of Work.
 - 2. Update as necessary during progress of Work to adjust for changed conditions and as approved by Owner.
 - a. Coordination drawings:
 - 1) Provide where coordination is critical for installation of components fabricated off site and where space is limited and maximum utilization of space is required.
 - 2) Show relationship and integration of components and construction entities, required installation sequence, dimensions, and tolerances.
 - 3. Staff assignment list and emergency contact information:
 - a. 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 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 General Conditions.
 - b. Distribute contact information and post in field office coordination.

1.04 GENERAL COORDINATION REQUIREMENTS (See 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 77 00 - 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.

1.05 FIELD ENGINEERING

- A. 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 78 00 - Closeout Submittals.
- B. Prior to start of construction, verify location of control points and layout information on Drawings relative to property, setback, and easement lines.
- C. Provide competent field engineering services. Establish elevations, lines, and levels utilizing recognized engineering survey practices. Periodically verify layouts.
- D. Promptly replace dislocated control and reference points based on original survey control.

1.06 PROJECT COMMUNICATIONS SYSTEM (CIMS)

- A. Utilize PSFA - CIMS for project communications. Refer to General Conditions.
- B. Arrange with Owner as necessary to obtain PSFA - CIMS training for Contractor's principal staff on Project.

1.07 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, Design Professional, Consultants, Contractor, and major subcontractors and suppliers.
- C. Agenda:
 - 1. Designation and description of roles of responsible personnel representing Owner, Contractor, and Design Professional.
 - 2. Status of permits and Notice to Proceed.
 - 3. Site mobilization plan, use of premises by Contractor and Owner, Owner's occupancy requirements, work hours, regular school schedule and special school schedule considerations.
 - 4. Construction schedule, work sequence, and delivery priorities.
 - a. Material color selections.
 - 5. Weekly job meeting schedule.
 - 6. Owner's right to salvage.
 - 7. Presentation and discussion of site mobilization plan specified in Section 01 50 00 - Temporary Facilities and Controls.
 - 8. Construction facilities, controls, and temporary utilities.
 - 9. Procedures for processing submittals, applications for payment, substitution requests, field decisions and communications, and contract modifications.
 - 10. PSFA - CIMS
 - 11. Wage rates.
 - 12. Procedures for maintaining project record documents.
 - 13. Testing and inspection procedures.
 - 14. Contract closeout procedures.
 - 15. Emergency contact information.
 - 16. Other pertinent items.

1.08 PROGRESS MEETINGS

- A. Refer to General Conditions for requirements.

1.09 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 7 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.

1.10 PROGRESS SCHEDULE

- A. See the General Conditions for requirements.

1.11 PROGRESS PHOTOGRAPHS

- A. Photography Type: Digital, electronic files.
- B. Provide photographs of site and construction. Take photographs during construction activities where work will be concealed and throughout progress of work. Photographs may be used to establish location and arrangement of concealed elements, such as plumbing systems. These shall be part of the Record Documents.

1.12 COPYRIGHT

- A. The Drawings and Project Manual of this project are copyrighted by the Architect and consultants. Said drawings, details, and specifications shall NOT be reproduced in any manner by any contractor, sub-contractor, supplier, or manufacturer for the purpose of preparing required submittals.

PART 2 - PRODUCTS

2.01 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.

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 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.

1.02 RELATED DOCUMENTS

- A. General Conditions: Contractor's responsibilities regarding submittals.
- B. Section 01 31 00 - Product Management and Coordination: Submittal of Progress Schedule and coordination drawings.
- C. Section 01 33 01 - Submittal Transmittal Form.
- D. Section 01 40 00 - Quality Requirements: Manufacturers' field services and reports.
- E. Section 01 63 00 - Product Substitution Procedures: Submittal of substitution requests.
- F. Section 01 78 00 - Closeout Submittals: Submittal of project record drawings, operation and maintenance manuals, warranties, certifications of inspection, extra materials and other closeout submittals.
- G. Refer to individual specification sections for unique submittal requirements related to a specific product.

1.03 SUBMITTAL SCHEDULE

- A. Procedure:
 - 1. Submit for review by Architect 3 copy of Submittal Schedule within 20 days of date of Agreement Between Owner and Contractor but no later than Notice to Proceed.
 - 2. Revise to address review comments and resubmit.
 - 3. Update Submittal Schedule to reflect change orders, Progress Schedule revisions, and status of individual submittals. Submit 3 copies with each Application for Payment.
 - 4. Format: Tabular arrangement indicating:
 - a. Submittal number and title.
 - b. Related specification section number and title.
 - c. Proposed submittal date, actual submittal date, and date reviewed submittal is required.

1.04 SUBMITTAL PROCEDURES

- A. Schedule submittals to expedite Work. Unless otherwise noted, submittals shall be submitted within 30 days of date of Agreement between Owner and Contractor.
- B. Preparation:
 - 1. Provide separate submittal for each specification section requiring submittals. Include all material requested for that section. Provide folders or binders for material.
 - 2. Coordinate submission of related items. Group submittals of related products or a system in a single transmission.
 - 3. Identify variations from requirements of Contract Documents. State product and system limitations which may adversely affect Work.
 - 4. Mark or show dimensions and values in same units as specified.
 - 5. Provide 4 by 6 inches minimum space for Architect and Contractor review stamps.
 - 6. Contractor review:
 - a. Review submittals prior to transmittal. Verify compatibility with field conditions and dimensions, product selections and designations, and conformance of submittal with requirements of Contract

- Documents. Return non-conforming submittals to originator for revision rather than submitting to Architect.
- b. Coordinate submittals to avoid conflicts between various items of work.
 - c. Apply Contractor's stamp with signature certifying that review, verification of products required, field dimensions, adjacent construction, and coordination of information is in accordance with the requirements of the Contract Documents.
 - d. Failure of Contractor to review submittals prior to transmittal to Architect shall be cause for rejection.
7. Transmittal:
- a. Transmit each submittal with a separate Submittal Transmittal Form found at the end of this section.
 - b. Sequentially number transmittal forms. Re-submittals shall have original number with an alphabetic suffix.
 - c. Identify project, Contractor, subcontractor, supplier, pertinent drawing sheet and detail numbers, and associated specification section numbers.
 - d. Sign Submittal Transmittal Form and deliver submittals to Architect.
8. Electronic Submittals:
- a. Mixed submittals (part paper and part electronic) will not be reviewed. This applies to all trades. As an example, for a specific project, if Division 3 documents are submitted electronically, then all other divisions must be submitted electronically as well.
9. Electronic submittals will be reviewed when allowed by the Prime Design Professional (Architect or Other Engineer.) Electronic submittals will be reviewed provided the following conditions are met.
- a. Complete submittals in pdf format will be reviewed by CSI Specification Division
 - b. All data for all Divisions must be submitted as a single package to the design professional. Review will commence only when all data has been received.
 - c. Submittals linked to a manufacturer's web site will not be reviewed.
 - d. Re-submittals must highlight changes from previous submittals.
10. Review: Architect will review and return submittals with comments.
11. Do not fabricate products or begin work which requires submittals until return of submittal with Architect acceptance.
12. On return promptly distribute reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.
13. Resubmission:
- a. Revise and resubmit submittals as required within 15 days of return from Architect.
 - b. Make re-submittals under procedures specified for initial submittals.
 - c. Identify all changes made since previous submittal.

1.05 SHOP DRAWINGS

- A. Submission:
1. Submit one reproducible transparency and 3 copies to be retained by Architect.
 2. Fold drawings to fit submittal folders.
3. Form:
- a. Size: 8-1/2 by 11 inches minimum and 36 by 48 inches maximum except for full size details and templates.
 - b. Present in a clear and thorough manner. Title each drawing with Project name. Identify each element of drawing with reference number.
 - c. Plans, elevations, sections, and detail shop drawings shall be to scale with scale indicated.
 - d. Indicate field verified dimensions. Show relationship of products to adjacent work. Note coordination requirements.
 - e. Schematics and wiring and other diagrams shall be logically arranged and presented in a clear understandable manner with all items labeled.

1.06 PRODUCT DATA

- A. Submission: Submit the number of copies which Contractor requires plus 3 copies to be retained by Architect.
- B. Form:

1. Provide all critical information such as reference standards, performance characteristics, capacities, power requirements, wiring and piping diagrams, controls, component parts, finishes, dimensions, and required clearances.
2. Submit only data which are pertinent. Mark each copy of manufacturer's standard printed data to identify products, models, options, and other data pertinent to project.
3. Modify manufacturer's standard schematic drawings and diagrams and supplement standard data to provide specific information applicable to project. Delete information not applicable.
4. Colors and patterns: Unless color and pattern is specified for product, submit accurate color and pattern charts or samples illustrating manufacturer's full range for selection by Architect. Submit for Architect's review accurate color and pattern samples as required for specified colors.
5. Allow four (4) weeks after Architect has received all color samples for items that require color selections for colors to be selected. Any items that require color selection prior to any fabrication need to be identified in the submittal schedule as "Need color selection before fabrication".

1.07 SAMPLES

A. Submission:

1. Submit the number of samples specified in individual specification sections. One sample will be retained by Architect.
2. Once all submittals which require color samples to be submitted are received by the Architect, the color selection process will begin. The Architect will only issue a color schedule once all sample colors are submitted. Colors will not be released for individual items. Allow four (4) weeks after all colors have been received for color selections to be made.
3. Label each sample with identification related to Submittal Transmittal Form.
4. Submit samples at least 45 days prior to date Contractor needs approval for ordering or incorporation into Work.
5. Type: Submit samples to illustrate functional and aesthetic characteristics of the products, with all integral parts and attachment devices. Include full range of manufacturer's standard finishes, indicating colors, textures, and patterns for Architect selection.
6. Reviewed product samples may be used in work with approval of Architect.

1.08 MANUFACTURER'S INSTRUCTIONS

A. Submission: Submit the number of copies which Contractor requires plus 3 to be retained by Architect.

B. Form:

1. Manufacturers' printed instructions for activities such as delivery, storage, assembly, installation, wiring, start-up, adjusting, finishing, and maintaining.
2. Indicate pertinent portions and identify conflicts between manufacturers' instructions and Contract Documents.

1.09 DESIGN DATA AND CALCULATIONS

A. Submission: Submit the number of copies which Contractor requires plus 3 to be retained by Architect.

B. Form:

1. Provide basic calculations, analyses, and data to support design decisions and demonstrate compliance with specified requirements. State assumptions and define parameters. Give general formulas and references. Provide sketches as required to illustrate design method and application.
2. Arrange calculations and data in a logical manner with suitable text to explain procedure.
3. Indicate name, title, and telephone number of individual performing design and include professional seal of designer where applicable or required.

1.10 MANUFACTURERS' CERTIFICATES

A. Submission: Submit the number of copies which Contractor requires plus 3 to be retained by Architect.

B. Form:

1. Certificates shall indicate that products conform to or exceed specified requirements. Submit supporting reference data, affidavits, and certifications as required.
2. Certificates may be based on recent or previous test results if acceptable to Architect.

1.11 REPORTS

A. Submission:

1. Submit the number of copies which Contractor requires plus 3 to be retained by Architect.
2. Submit reports within 15 days after completion of activity.
3. Form:
 - a. Present complete information in a clear concise manner.
 - b. Typed or computer printed on 8-1/2 by 11 inch white paper.
 - c. Bind with titled cover in folder, plastic binder, or three ring binder as appropriate for quantity of material.
4. Reports shall include:
 - a. Time, location, conditions, and duration of activity.
 - b. Names of persons performing and witnessing activity.
 - c. Equipment used.
 - d. Description of activity, data recorded, and results.
 - e. Deficiencies found, corrective measures, and results of retesting.
 - f. Other pertinent data.

PART 2 PRODUCTS

2.01 Not used.

PART 3 EXECUTION

3.01 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 []
 Make corrections noted []
 Revise and resubmit []
 Rejected []

COMMENTS: _____

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 40 00

QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Installation quality control.
 - 2. Reference standards.
 - 3. Field samples.
 - 4. Inspection and testing laboratory services.
 - 5. Manufacturer's field services and reports.

1.02 RELATED DOCUMENTS

- A. General Conditions:
 - 1. Contractor's supervision and construction procedures.
 - 2. Owner's responsibilities for testing and inspections.
 - 3. Contractor's responsibility for uncovering and correction of work.
 - 4. Requirements for tests and inspections.
- B. Section 01 60 00 - Product Requirements: Requirements for material and product quality.

1.03 INSTALLATION QUALITY CONTROL

- A. Monitor and maintain quality control over manufacturers, suppliers, subcontractors, work force, site conditions, products, and services to ensure Work is of specified, consistent quality.
- B. Workmanship:
 - 1. Specified requirements represent a minimum acceptable quality for Work. Comply with industry standards except when more stringent specified requirements and tolerances indicate higher standards or more precise workmanship.
 - 2. Perform work with suitable qualified personnel to produce work of specified quality.
 - 3. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and distortion.
 - 4. Manufacturer's instructions:
 - a. Comply fully with manufacturer's instructions. Perform steps in manufacturer's recommended sequence.
 - b. Should instructions conflict with Contract Documents, request clarification from Architect before proceeding.

1.04 REFERENCE STANDARDS

- A. When specifications require conformance to a reference standard, applicable standard shall be the edition current at date of receiving bids.
- B. Should specified reference standard conflict with Contract Documents, request clarification from Architect.
- C. Contractual relationship, duties, and responsibilities of the parties to the Contract nor those of Architect shall not be altered from that stated in the Contract Documents by mention or inference to the contrary in a specified reference standard.

1.05 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. Structural Tests and Special Inspections as required per Chapter 17 of the 2015 IBC.
 - 2. Materials testing and inspections identified in the structural drawings or specifications.
 - 3. Compaction for earthwork.
 - 4. Test, Adjust, and Balance HVAC system and controls as specified in Division 23.
 - 5. Other materials, components, and systems where routine testing to determine compliance with Contract Documents is required. See General Conditions.

6. Testing firm shall perform inspections, tests, and other services specified in individual specification sections and as required.
7. Testing firm shall submit directly to Architect 3 copies of reports indicating observations and results of inspections and tests with indication of compliance or non-compliance with Contract Documents. Submit one copy to the Owner directly and concurrent with submission to Architect.
8. Contractor's responsibilities:
 - a. Cooperate with testing firm and furnish materials and other products to be tested. Provide assistance in accessing and obtaining samples. Provide storage for samples and testing equipment.
 - b. Notify Architect 2 days prior to operations requiring testing services.
 - c. Make arrangements with testing firm and pay for additional samples and tests required for Contractor's use.
9. Retesting: Retesting required because of non-conformance (failed tests) to specified requirements shall be performed by same testing firm and paid for by Contractor.

1.06 MANUFACTURER'S FIELD SERVICES AND REPORTS

- A. When required by an individual specification section, provide services of manufacturer's field representative to observe site conditions, installation, quality of workmanship, starting of equipment, testing and adjusting equipment, and as applicable, to instruct and supervise field operations.
- B. Submit qualifications of manufacturer's field representative to Architect for approval 15 days in advance of required observation.
- C. Manufacturer's field representatives shall report observations, site decisions, and instructions given to installers that are supplemental or contrary to manufacturer's written instructions.
- D. Submit report of field representative within 30 days of observation and in accordance with Section 0133 00 - Submittal Procedures.

PART 2 PRODUCTS

2.01 Not used

PART 3 EXECUTION

3.01 Not used.

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 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. Removal of Temporary Utilities, Facilities and Controls.

1.02 RELATED DOCUMENTS

- A. General Conditions:
 - 1. Contractor's use of site.
 - 2. Contractor's responsibility for cleaning.
 - 3. Safety precautions and programs.
- B. Section 01 31 00: Project Management and Coordination
- C. Section 01 70 00 - Execution Requirements: Progress cleaning.

1.03 REFERENCES

- A. NFPA 10 - Standard for Portable Fire Extinguishers.
- B. NFPA 241 - Safeguarding Building Construction, Alterations, and Demolition Operations.

1.04 SITE MOBILIZATION PLAN

- A. Coordinate locations for temporary facilities with Design Professional and Owner.
- B. Prior to mobilization, submit to the Owner and Design Professional a site mobilization plan incorporating discussion and direction from the Pre-Construction Conference.

1.05 TEMPORARY ELECTRICITY

- A. Provide and pay for temporary electricity used during construction. Provide service disconnect and overcurrent protection. Provide temporary feeder as required.
- B. Provide power outlets for construction operations with branch wiring, distribution boxes, and flexible power cords as required.

1.06 TEMPORARY LIGHTING

- A. Provide lighting for construction operations in accordance with 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.

1.07 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.
- D. Change all HVAC filters in system serving area of work.

1.08 TEMPORARY WATER SERVICE

- A. Provide, maintain, and pay for suitable quality water service required for construction operations.
- B. Assume responsibility for temporary connections and water lines. Upon completion, remove temporary facilities.

1.09 COMMUNICATIONS

- A. Provide, maintain, and pay for telephone service to field office.

1.10 FENCING

- A. Provide temporary fencing around 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 with vision screen netting. Equip with vehicular and pedestrian gates with locks.

1.11 BARRIERS AND PROTECTION

- A. Security: Provide to protect Work and existing facilities from unauthorized entry, vandalism, and theft.
- B. 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.
- C. Protect existing trees and plants designated to remain. Replace damaged plant material.

1.12 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.

1.13 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.

1.14 ACCESS

- A. 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.

1.15 FIELD FACILITIES

- A. Provide and maintain a weathertight, fully equipped field office.
- B. Provide space for project meetings with table and chairs to accommodate 12 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 toilet facilities shall not be used by work force.

1.17 DRINKING WATER

- A. Provide independent source of drinking water for workforce.

1.18 PROJECT SIGNS

- A. Architect's construction sign. See detail in the drawings.
- B. Allow no other signs to be displayed without approval of Design Professional or as required by Owner.

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

2.01 Not used.

PART 3 - EXECUTION

3.01 Not used.

END OF SECTION

SECTION 01 57 13
TEMPORARY EROSION & SEDIMENT CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Prevention of erosion due to construction activities.
- B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.
- C. Restoration of areas eroded due to insufficient preventive measures.
- D. Compensation of Owner for fines levied by authorities having jurisdiction due to non-compliance by General Contractor.

1.02 REFERENCE STANDARDS

- A. ASTM D4355/D4355M - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus; 2014.
- B. ASTM D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity; 1999a (Reapproved 2014).
- C. ASTM D4533 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles; 2011.
- D. ASTM D4632/D4632M - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles; 2015a.
- E. ASTM D4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile; 2012.
- F. ASTM D4873 - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples; 2002 (Reapproved 2009).
- G. EPA (NPDES) - National Pollutant Discharge Elimination System (NPDES), Construction General Permit; Current Edition.
- H. FHWA FLP-94-005 - Best Management Practices for Erosion and Sediment Control; 1995.
- I. USDA TR-55 - Urban Hydrology for Small Watersheds; USDA Natural Resources Conservation Service; 2009.

1.03 PERFORMANCE REQUIREMENTS

- A. Comply with requirements of EPA (NPDES) for erosion and sedimentation control, as specified by the NPDES, for Phases I and II, and in compliance with requirements of Construction General Permit (CGP), whether the project is required by law to comply or not.
- B. Comply with all requirements of the city and county for which the project is located for erosion and sedimentation control .
- C. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.
 - 1. Owner will submit a Notice of Intent (NOI) obtain permits and pay yearly fee required to the Department of Health and Environment (KDHE).
 - 2. Owner will withhold payment to General Contractor equivalent to all fines resulting from non-compliance with applicable regulations.
- D. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.
- E. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.
 - 1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
 - 2. Anticipate runoff volume due to the most extreme short term and 24-hour rainfall events that might occur in 25 years.
- F. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.

1. Control movement of sediment and soil from temporary stockpiles of soil.
 2. Prevent development of ruts due to equipment and vehicular traffic.
 3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- G. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.
1. Prevent windblown soil from leaving the project site.
 2. Prevent tracking of mud onto public roads outside site.
 3. Prevent mud and sediment from flowing onto sidewalks and pavements.
 4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- H. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
 2. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.
- I. Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
- J. Open Water: Prevent standing water that could become stagnant.
- K. Maintenance: General Contractor shall maintain temporary preventive measures until permanent measures have been established.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Erosion and Sedimentation Control Plan:
1. Submit within 2 weeks after Notice to Proceed.
 2. Include:
 - a. Site plan identifying soils and vegetation, existing erosion problems, and areas vulnerable to erosion due to topography, soils, vegetation, or drainage.
 - b. Site plan showing grading; new improvements; temporary roads, traffic accesses, and other temporary construction; and proposed preventive measures.
 - c. Where extensive areas of soil will be disturbed, include storm water flow and volume calculations, soil loss predictions, and proposed preventive measures.
 - d. Schedule of temporary preventive measures, in relation to ground disturbing activities.
 - e. Other information required by law.
 - f. Format required by law is acceptable, provided any additional information specified is also included.
 3. Obtain the approval of the Plan by authorities having jurisdiction.
 4. Obtain the approval of the Plan by Owner.
- C. Certificate: Mill certificate for silt fence fabric attesting that fabric and factory seams comply with specified requirements, signed by legally authorized official of manufacturer; indicate actual minimum average roll values; identify fabric by roll identification numbers.
- D. Inspection Reports: Submit report of each inspection; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Mulch: Use one of the following:
1. Straw or hay.
 2. Wood waste, chips, or bark.
 3. Erosion control matting or netting.

- B. Grass Seed For Temporary Cover: Select a species appropriate to climate, planting season, and intended purpose. If same area will later be planted with permanent vegetation, do not use species known to be excessively competitive or prone to volunteer in subsequent seasons.
- C. Bales: Air dry, rectangular straw bales.
 - 1. Cross Section: 14 by 18 inches (350 by 450 mm), minimum.
 - 2. Bindings: Wire or string, around long dimension.
- D. Bale Stakes: One of the following, minimum 3 feet (1 m) long:
 - 1. Steel U- or T-section, with minimum mass of 1.33 pound per linear foot (1.98 kg per linear m).
 - 2. Wood, 2 by 2 inches (50 by 50 mm) in cross section.
- E. Silt Fence Fabric: Polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; fabric including seams with the following minimum average roll lengths:
 - 1. Average Opening Size: 30 U.S. Std. Sieve (0.600 mm), maximum, when tested in accordance with ASTM D4751.
 - 2. Permittivity: 0.05 sec^{-1} , minimum, when tested in accordance with ASTM D4491.
 - 3. Ultraviolet Resistance: Retaining at least 70 percent of tensile strength, when tested in accordance with ASTM D4355/D4355M after 500 hours exposure.
 - 4. Tensile Strength: 100 pounds-force (450 N), minimum, in cross-machine direction; 124 pounds-force (550 N), minimum, in machine direction; when tested in accordance with ASTM D4632/D4632M.
 - 5. Elongation: 15 to 30 percent, when tested in accordance with ASTM D4632/D4632M.
 - 6. Tear Strength: 55 pounds-force (245 N), minimum, when tested in accordance with ASTM D4533.
 - 7. Color: Manufacturer's standard, with embedment and fastener lines preprinted.
 - 8. Manufacturers:
 - a. TenCate: www.tencate.com/#sle.
 - b. North American Green: www.nagreen.com/#sle.
 - c. Propex Geosynthetics: www.geotextile.com/#sle.
- F. Silt Fence Posts: One of the following, minimum 5 feet (1500 mm) long:
 - 1. Steel U- or T-section, with minimum mass of 1.33 pound per linear foot (1.98 kg per linear m).
 - 2. Softwood, 4 by 4 inches (100 by 100 mm) in cross section.
 - 3. Hardwood, 2 by 2 inches (50 by 50 mm) in cross section.
- G. Gravel: See Section 32 11 23 for aggregate.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

- A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

3.03 SCOPE OF PREVENTIVE MEASURES

- A. In all cases, if permanent erosion resistant measures have been installed temporary preventive measures are not required.
- B. Construction Entrances: Traffic-bearing aggregate surface.
 - 1. Width: As required; 20 feet (7 m), minimum or as indicated on the drawings.
 - 2. Length: 50 feet (16 m), minimum or as indicated on the drawings.
 - 3. Provide at each construction entrance from public right-of-way.
 - 4. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.
- C. Linear Sediment Barriers: Made of silt fences or straw bales.
 - 1. Provide linear sediment barriers:
 - a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.

- b. Along the top of the slope or top bank of drainage channels and swales that traverse disturbed areas.
 - c. Along the toe of cut slopes and fill slopes.
 - d. Perpendicular to flow across the bottom of existing and new drainage channels and swales that traverse disturbed areas or carry runoff from disturbed areas; space at maximum of 100 feet apart (at maximum of 30 m apart).
- 2. Space sediment barriers with the following maximum slope length upslope from barrier:
 - a. Slope of Less Than 2 Percent: 100 feet (30 m)..
 - b. Slope Between 2 and 5 Percent: 75 feet (23 m).
 - c. Slope Between 5 and 10 Percent: 50 feet (15 m).
 - d. Slope Between 10 and 20 Percent: 25 feet (7.5 m).
 - e. Slope Over 20 Percent: 15 feet (4.5 m).
- D. Storm Drain Curb Inlet Sediment Trap: Protect each curb inlet using one of the following measures:
 - 1. Filter fabric wrapped around hollow concrete blocks blocking entire inlet face area; use one piece of fabric wrapped at least 1-1/2 times around concrete blocks and secured to prevent dislodging; orient cores of blocks so runoff passes into inlet.
 - 2. Straw bale row blocking entire inlet face area; anchor into pavement.
- E. Storm Drain Drop Inlet Sediment Traps: As detailed on drawings.
- F. Temporary Splash Pads: Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.
- G. Soil Stockpiles: Protect using one of the following measures:
 - 1. Cover with polyethylene film, secured by placing soil on outer edges.
 - 2. Cover with mulch at least 4 inches (100 mm) thickness of pine needles, sawdust, bark, wood chips, or shredded leaves, or 6 inches (150 mm) of straw or hay.
- H. Mulching: Use only for areas that may be subjected to erosion for less than 6 months.
 - 1. Wood Waste: Use only on slopes 3:1 or flatter; no anchoring required.
- I. Temporary Seeding: Use where temporary vegetated cover is required.

3.04 INSTALLATION

- A. Traffic-Bearing Aggregate Surface:
 - 1. Excavate minimum of 6 inches (150 mm).
 - 2. Place geotextile fabric full width and length, with minimum 12 inch (300 mm) overlap at joints.
 - 3. Place and compact at least 6 inches (150 mm) of 1 1/2 to 3 1/2 inch (40 to 90 mm) diameter stone.
- B. Silt Fences:
 - 1. Store and handle fabric in accordance with ASTM D4873.
 - 2. Where slope gradient is less than 3:1 or barriers will be in place less than 6 months, use nominal 16 inch (405 mm) high barriers with minimum 36 inch (905 mm) long posts spaced at 6 feet (1830 mm) maximum, with fabric embedded at least 4 inches (100 mm) in ground.
 - 3. Where slope gradient is steeper than 3:1 or barriers will be in place over 6 months, use nominal 28 inch (710 mm) high barriers, minimum 48 inch (1220 mm) long posts spaced at 6 feet (1830 mm) maximum, with fabric embedded at least 6 inches (150 mm) in ground.
 - 4. Where slope gradient is steeper than 3:1 and vertical height of slope between barriers is more than 20 feet (6 m), use nominal 32 inch (810 mm) high barriers with woven wire reinforcement and steel posts spaced at 4 feet (1220 mm) maximum, with fabric embedded at least 6 inches (150 mm) in ground.
 - 5. Install with top of fabric at nominal height and embedment as specified.
 - 6. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches (460 mm), with extra post.
 - 7. Fasten fabric to wood posts using one of the following:
 - a. Four nails per post with 3/4 inch (19 mm) diameter flat or button head, 1 inch (25 mm) long, and 14 gage, 0.083 inch (2.11 mm) shank diameter.
 - b. Five staples per post with at least 17 gage, 0.0453 inch (1.150 mm) wire, 3/4 inch (19 mm) crown width and 1/2 inch (12 mm) long legs.
 - 8. Fasten fabric to steel posts using wire, nylon cord, or integral pockets.

9. Wherever runoff will flow around end of barrier or over the top, provide temporary splash pad or other outlet protection; at such outlets in the run of the barrier, make barrier not more than 12 inches (300 mm) high with post spacing not more than 4 feet (1220 mm).
- C. Straw Bale Rows:
 1. Install bales in continuous rows with ends butting tightly, with one bale at each end of row turned uphill.
 2. Install bales so that bindings are not in contact with the ground.
 3. Embed bales at least 4 inches (100 mm) in the ground.
 4. Anchor bales with at least two stakes per bale, driven at least 18 inches (450 mm) into the ground; drive first stake in each bale toward the previously placed bale to force bales together.
 5. Fill gaps between ends of bales with loose straw wedged tightly.
 6. Place soil excavated for trench against bales on the upslope side of the row, compacted.
- D. Mulching Over Large Areas:
 1. Dry Straw and Hay: Apply 2-1/2 tons per acre (6350 kg per hectare); anchor using dull disc harrow or emulsified asphalt applied using same spraying machine at 100 gallons of water per ton of mulch.
 2. Wood Waste: Apply 6 to 9 tons per acre (15,200 to 20,800 kg per hectare).
 3. Erosion Control Matting: Comply with manufacturer's instructions.
- E. Mulching Over Small and Medium Areas:
 1. Dry Straw and Hay: Apply 4 to 6 inches (100 to 150 mm) depth.
 2. Wood Waste: Apply 2 to 3 inches (50 to 75 mm) depth.
 3. Erosion Control Matting: Comply with manufacturer's instructions.
- F. Temporary Seeding:
 1. When hydraulic seeder is used, seedbed preparation is not required.
 2. When surface soil has been sealed by rainfall or consists of smooth undisturbed cut slopes, and conventional or manual seeding is to be used, prepare seedbed by scarifying sufficiently to allow seed to lodge and germinate.
 3. If temporary mulching was used on planting area but not removed, apply nitrogen fertilizer at 1 pound per 1000 sq ft (0.5 kg per 100 sq m).
 4. On soils of very low fertility, apply 10-10-10 fertilizer at rate of 12 to 16 pounds per 1000 sq ft (6 to 8 kg per 100 sq m).
 5. Incorporate fertilizer into soil before seeding.
 6. Apply seed uniformly; if using drill or cultipacker seeders place seed 1/2 to 1 inch (12 to 25 mm) deep.
 7. Irrigate as required to thoroughly wet soil to depth that will ensure germination, without causing runoff or erosion.
 8. Repeat irrigation as required until grass is established.

3.05 MAINTENANCE

- A. Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches (13 mm) or more rainfall at the project site, and daily during prolonged rainfall.
- B. Repair deficiencies immediately.
- C. Silt Fences:
 1. Promptly replace fabric that deteriorates unless need for fence has passed.
 2. Remove silt deposits that exceed one-third of the height of the fence.
 3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.
- D. Straw Bale Rows:
 1. Promptly replace bales that fall apart or otherwise deteriorate unless need has passed.
 2. Remove silt deposits that exceed one-half of the height of the bales.
 3. Repair bale rows that are undercut by runoff or otherwise damaged, whether by runoff or other causes.
- E. Clean out temporary sediment control structures weekly and relocate soil on site.
- F. Place sediment in appropriate locations on site; do not remove from site.

3.06 CLEAN UP

- A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Architect.
- B. Clean out temporary sediment control structures that are to remain as permanent measures.
- C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF SECTION

SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. General product requirements.
 - 2. Transportation and handling.
 - 3. Storage and protection of products.

1.02 RELATED DOCUMENTS

- A. Section 01 10 00 - Summary: Definitions for "products", "supply", "furnish", "provide", and "execution".
- B. Section 01 40 00 - Quality Requirements: Product quality monitoring.
- C. Section 01 63 00 - Product Substitution Procedures: Procedures for requesting use of unspecified products.

1.03 GENERAL PRODUCT REQUIREMENTS

- A. Products shall be new and currently in production.
- B. Do not use products removed from other facilities except where use of salvaged products is required in Contract Documents.
- C. Products of the same category shall be products of a single manufacturer. Where possible, products under a single specification section shall be of the same manufacturer.
- D. Only non-asbestos containing materials shall be used or incorporated in the Work. No materials used on this project shall contain asbestos. Contractor shall provide certificate stating that no materials containing asbestos have been used on this project. Include certificate with the close-out documents."

1.04 TRANSPORTATION AND HANDLING

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, and damage.
- D. Deliver packaged products in unopened and undamaged cartons and wrappings.

1.05 STORAGE AND PROTECTION

- A. Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight, climate controlled enclosures.
- B. For exterior storage of fabricated products, place on supports above ground, sloped to drain.
- C. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.
- D. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- E. Arrange storage of products to permit access for inspection. Periodically inspect to ensure products are undamaged and are maintained under specified conditions.

PART 2 PRODUCTS

2.01 Not used.

PART 3 EXECUTION

3.01 Not used.

END OF SECTION

SECTION 01 63 00
PRODUCT SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes requirements for product options and substitution procedures.

1.02 PRODUCT OPTIONS

- A. For products specified by reference standards or by description only, provide any product meeting those standards or description.
- B. For products specified by naming one or more manufacturers with the designation that no substitutions are allowed, provide only named products.
- C. For products specified by naming one or more manufacturers, provide named products and approved substitute products listed in Addenda, or submit a request for substitution in accordance with Paragraph 1.3.

1.03 PRODUCTS AND ENERGY PERFORMANCE

- A. This Project is designated to receive an EPA ENERGY STAR rating of 75 or higher.
- B. Proposed substitutions that may adversely alter the energy performance of the Project will not be approved.

1.04 SUBSTITUTIONS

- A. During bidding, Architect will consider written requests from qualified bidders, subcontractors, and manufacturers for substitutions.
 - 1. Submit separate request for each substitution with Form 01 63 01 - Prior Approval Substitution Request Form. Copy of form follows this Section.
 - 2. Submit substitution request in accordance with procedures and time limitations stated in Instructions to Bidders.
 - 3. Substitutions approved during bidding will be listed in Addenda.
- B. After Contract award:
 - 1. After signing of Agreement Between Owner and Contractor, Architect will consider written requests for substitutions if one or more of these conditions exist:
 - a. Unavailability of specified products through no fault of Contractor.
 - b. Qualified installer is not available for specified product.
 - c. Substitution is required for compliance with final interpretation of code requirements or insurance regulations.
 - d. Subsequent information discloses inability of specified products to perform properly or to fit in designated space.
 - e. Refusal of manufacturer to certify or guarantee performance of the specified product as required.
 - 2. Submit separate request for each substitution with Form 01 63 02 - 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.
 - 3. Architect will determine acceptability of proposed substitutions and notify Contractor in writing. Accepted substitutions will be included by Change Order with associated modifications of contract amount and time.
 - 4. Substitutions will not be considered after contract award if indicated or implied on shop drawings and product data submittals.
- C. Use of approved substitution listed in Addenda or request for substitution after Contract award shall constitute representation that Contractor:
 - 1. Has investigated product and determined it meets or exceeds quality level of specified product.
 - 2. Will provide same warranty for substitution as for specified product.
 - 3. Will coordinate installation and make changes to other work required to accommodate accepted substitution and complete Work.
 - 4. Waives claims for additional costs or time extensions related to substitutions which later become apparent.

- D. Procedure: Submit 3 copies of request for substitution. Limit each request to one proposed substitution. Include in request:
1. Complete data substantiating compliance of proposed substitution with Contract Documents.
 2. For products:
 - a. Product identification, including manufacturer's name and address.
 - b. Manufacturer's literature containing product description, performance and test data, and reference standards.
 - c. Samples as required.
 3. For construction methods:
 - a. Detailed description of proposed method.
 - b. Drawings illustrating methods.
 4. Itemized comparison of proposed substitution with product speci-fied.
 5. Data relating to changes in construction schedule.
 6. For requests submitted after Contract award, give cost data compar-ing proposed substitution with specified product and amount of proposed change to Contract Sum.

PART 2 PRODUCTS

2.01 Not used.

PART 3 EXECUTION

3.01 Not used.

END OF SECTION

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. <u>No</u> 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 the 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. <u>No</u> aspect of Project will require re-design. | TRUE FALSE |
| 4. Use of substitution will <u>not</u> 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 the 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 70 00

EXECUTION REQUIREMENTS

PART 1 GENERAL

1.01 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 to make several parts fit together.
 - 3. Progress cleaning.

1.02 RELATED DOCUMENTS

- A. General Conditions:
 - 1. Contractor's responsibilities regarding cutting and patching operations.
 - 2. Uncovering and correction of work.
- B. Section 01 50 00 - Temporary Facilities and Controls: Temporary barriers and enclosures.
- C. Section 01 77 00 - Closeout Procedures: Final cleaning.
- D. Section 07 90 00 - Joint Sealers: Sealing of conduits, piping, and other items penetrating structure.

1.03 SUBMITTALS

- A. Cutting request:
 - 1. Submit advance written request to Architect prior to cutting or other alteration which affects;
 - a. Structural integrity of an element.
 - b. Integrity of weather-exposed or moisture-resistant element.
 - c. Operation, efficiency, maintenance, or safety of an element.
 - d. Visual qualities of exposed elements.
 - e. Work of others under separate contract to Owner.
 - 1) Include in request:
 - (a) Project and Contractor identification.
 - (b) Location and description of proposed work.
 - (c) Necessity for cutting or alteration and alternatives to cutting and patching.
 - (d) Effect on work of this Contract, existing construction, and work of others under separate contract to Owner.
 - (e) Date work will be executed.

1.04 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

2.01 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 016300 - Product Substitution Procedures.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Prior to commencing a portion of Work:
 - 1. Verify that site conditions and substrate surfaces are acceptable for subsequent Work.
 - 2. Verify that substrate is capable of structural attachment of new Work being applied or attached and that required blocking is in place.
 - 3. Verify that substrate is compatible with, properly prepared, and otherwise ready to receive subsequent applications and finishes. Ensure that conditions conform to requirements of manufacturers of products to be applied.

4. Verify that utility services are available, of correct characteristics, and in correct location.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks and openings in substrate prior to applying next material or substance.
- C. Apply manufacturer required substrate primer, sealer, and conditioner prior to applying new material or substance to substrate.

3.03 INSTALLATION

- A. Install, construct, erect, assemble, and apply products in accordance with manufacturer's recommendations and instructions and specified requirements. Notify Architect where manufacturer's instructions conflict with specifications. Do not proceed until clarification is received.
- B. Install products secure, rigid, plumb, and level within specified or industry acceptable tolerances.
- C. Remove excess materials such as adhesive, grout, mortar, and sealants, from finished surfaces in a manner which does not stain, corrode, disfigure, or otherwise damage finished surface.
- D. Adjust working parts for smooth, proper operation.
- E. Replace deformed, scratched, cracked, broken, or otherwise damaged products as result of installation.
- F. After installation is complete, protect installed products and finished surfaces from subsequent construction operations in accordance with Section 01 50 00 - Temporary Facilities and Controls. Replace or repair subsequently damaged products and surfaces.
- G. Clean and maintain installed products in accordance with manufacturer's recommendations and specifications until Substantial Completion.

3.04 CUTTING AND PATCHING

- A. Refer to section 01 74 00 - Cutting and Patching for full descriptions.

3.05 ASPHALT PAVEMENT

- A. Where new pavement is damaged from construction operations, cut to install new underground utilities and where existing items are removed from paved areas:
 1. Cut pavement with saw or other means to provide neat, straight joints.
 2. Where existing pavement is damaged by removals, remove additional pavement to allow clean cuts.
 3. Backfill and sufficiently compact removal area prior to placement of pavement.
 4. Place pavement to match existing materials and thickness.
 - a. Immediately after placement, protect new pavement from mechanical damage.

3.06 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.

3.07 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove waste materials, debris, and rubbish from site weekly and legally dispose of off-site.
- C. Remove debris and rubbish from pipe chases, plenums, crawl spaces, above suspended ceilings, and other closed and remote spaces prior to enclosing space.
- D. Prior to surface finishing, broom and vacuum clean interior areas to eliminate dust.
- E. Washing of concrete trucks and dumping of excess cementitious material on site is not allowed. All such materials and contaminated soil shall be removed.
- F. Soils and other site material contaminated by paint residues, oils, fuels, and other construction products shall be removed and replaced with equivalent soil or material.
- G. Existing lawns, landscaped areas, and areas for future landscaping affected by construction operations shall be raked to remove stones, mortars, aggregates, and other construction debris in excess of 3/4 inch diameter.

- H. Clean mud and sediment resulting from Contractor's operations or traffic from all sidewalks, public streets and parking areas.

END OF SECTION

SECTION 01 74 00

CUTTING AND PATCHING

PART 1 GENERAL

1.01 DESCRIPTION

- A. Cutting-and patching is hereby defined to include but is not necessarily limited to the cutting and patching of nominally completed and existing work, in order to accommodate the coordination of work, or the installation of other work, or to uncover other work for access or inspection, or to obtain samples for testing, or for similar purposes; and is defined to exclude integral cutting-and-patching during the manufacturing, fabricating, erecting and installing process for individual units of work. Drilling the work to install fasteners and similar operations are excluded from the definition of cutting-and-patching.
- B. Patching also is defined as repair to work in progress or completed or existing work, landscaping or other features. Existing work shall be prepared, cleaned, and patched as required for new substrates by appropriate trades, ready for the subsequent finishes.
- C. Demolition is recognized as an example of a related-but-separate category of work, which may or may not also require cutting-and-patching as defined in this section.
- D. Excavating and the associated operations of boulder removal, dewatering, bracing, removal of underground debris, penetration of rock and other barriers, backfilling, and similar work as specified in Division 30 and in other contract documents, may be required as a special form of cutting-and-patching, but is recognized primarily as an example of a related-but-separate category of work.
- E. Restoring or removing and replacing non-complying work is specified separately from cutting and-patching, but may require cutting-and-patching operations as specified herein.
- F. Refer to other sections of these specifications for more specific cutting-and-patching requirements and limitations applicable to individual units of work. Refer all drawings for ramifications regarding work necessary to accomplish installation of items shown. For example ducts above ceilings will involve removal and reinstallation of ceiling; openings may need to be cut through walls and/or floors, etc.
- G. Each trade shall be responsible for the sizing, location, timing, coordinating and cost for cutting and patching necessary to accommodate their work. Individuals skilled in working the materials involved shall do cutting and patching.

1.02 QUALITY ASSURANCE

- A. Requirements for Structural Work:
 - 1. Do not cut-and-patch structural work in a manner resulting in a reduction of load-carrying capacity or load/deflection ratio.
- B. Operational and Safety Limitations:
 - 1. Do not cut-and-patch operational elements and safety-related components in a manner resulting in a reduction of capacities to perform in the manner intended or resulting in decreased operational life, increased maintenance, or decreased safety.
- C. Visual Requirements:
 - 1. Do not cut-and-patch work which is exposed on the exterior or exposed in occupied spaces of the building, in a manner resulting in a reduction of visual qualities or resulting in substantial evidence of the cut-and-patch work, both as judged solely by the Architect. Remove and replace work judged by the Architect to be cut-and-patched in a visually unsatisfactory manner. Trade requiring cutting may use small escutcheons or similar trim at piping, ducts and the like, if permitted for new work, and not as a device to cover work, which should be patched.
- D. Engage the original Installer/Fabricator to perform cutting-and-patching where possible. Where original Installer/Fabricator is not available, engage capable personnel to perform cut-and-patch work.

1.03 SUBMITTALS

- A. Where prior approval of cutting-and-patching is required, submit proposal well in advance of time work will be performed, and request approval to proceed. Include description of why cutting-and-patching cannot

(reasonably) be avoided, how it will be performed, products to be used, firms and tradesmen to perform the work, approximate dates of the work, and anticipated results in terms of variations from the work as originally completed. Where applicable, include cost proposal, suggested alternatives to the cutting-and-patching procedure proposed.

- B. Approval of Architect to proceed with proposed cutting-and-patching does not waive right to later require complete removal and replacement of work found to be cut-and-patched in an unsatisfactory manner.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Provide materials for cutting-and-patching which will result in equal-or-better work than the work being cut-and-patched, in terms of performance characteristics and including visual effect where applicable. Comply with the requirements, and use materials identical with the original materials where feasible and where recognized that satisfactory results can be produced thereby.

PART 3 EXECUTION

3.01 PREPARATION

- A. Provide adequate temporary support for work to be cut, to prevent failure. Do not endanger other work.
- B. Provide adequate protection of other work during cutting-and-patching, to prevent damage; and provide protection of the work from adverse weather exposure.

3.02 PROTECTION DURING CONSTRUCTION

- A. This does not cover delivery, handling, and protection of materials. Construct barriers to separate work areas from occupied areas and to protect building occupants from danger of uncontrolled temperature and pollution. General Contractor shall construct barriers so that dust, fumes, etc., produced during demolition and construction is contained within the work area and not disbursed into otherwise occupied areas. Seal openings as needed to provide such protection. Ventilate areas where dust and odors are produced (to outside) filter exhaust if necessary to not unduly pollute the air and/or inhibit proper operation of air conditioners and existing ven-tilation systems. Remove barriers when need is abated. Provide doors and locks where needed and required.
- B. Provide filters over building ventilating and return air outlets enveloped by dust enclosures when system ties into occupied areas.

3.03 CUTTING AND PATCHING

- A. Cut work by methods least likely to damage work to be retained and work adjoining. Review proposed procedure with original Installer where possible, and comply with his recommendations.
- B. In general, where physical cutting action is required, cut work with sawing and grinding tools, not with hammering and chopping tools. Core drill openings through structural concrete work.
- C. Comply with the requirements of applicable sections where cutting-and-patching involves various items of work.
- D. Patch with seams which are durable and as invisible as possible. Comply with specified tolerance for the work.
- E. Where feasible, inspect and test patch areas to demonstrate integrity of work.
- F. Restore exposed finishes of patched areas; and, where necessary extend finish restoration and new finish onto retained work adjoining, in a manner which will eliminate evidence of patching. As an example where patch occurs in or adjacent to a painted surface, extend final paint coat over the entire unbroken surface containing the patch, after patched area has received prime and base coats.

END OF SECTION

SECTION 01 75 00
STARTING AND ADJUSTING

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: General procedures for starting, monitoring, and adjusting items of equipment and complete systems.

1.02 RELATED DOCUMENTS

- A. Section 01 78 00 - Closeout Submittals: Operation and maintenance manuals.
- B. Division 23 - Testing, Adjusting, and Balancing: Balancing of HVAC system.

PART 2 PRODUCTS

2.01 Not used.

PART 3 EXECUTION

3.01 SCHEDULING

- A. Coordinate schedule for starting of systems and equipment to ensure proper sequencing.
- B. Notify Architect 7 days prior to startup of each system.

3.02 PREPARATION

- A. Prior to startup, inspect items of equipment and systems to ensure that:
 - 1. Installation is in accordance with manufacturer's instructions.
 - 2. No defective items have been installed and there are no loose connections.
 - 3. Power supplies are correct voltage, phasing, and frequency.
 - 4. Grounding and transient protection systems are properly installed.
 - 5. Items have been properly lubricated, belts tensioned, and control sequence and other conditions which may cause damage have been addressed.
 - 6. Verify that system wiring has been tested.
 - 7. Verify that provisions have been made for safety of personnel

3.03 STARTING OF SYSTEMS

- A. Execute starting under supervision of responsible personnel in accordance with manufacturer's instructions.
- B. When specified in individual sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment and system installation prior to startup and to supervise placing equipment and system in operation.
- C. Adjustment: Monitor systems and verify performance. Correct deficiencies. Replace defective components and equipment. Adjust equipment and systems for smooth and proper installation.
- D. Submit written report in accordance with Section 01 33 00 - Submittal Procedures that equipment and systems have been properly installed and are functioning correctly.

END OF SECTION

SECTION 01 77 00 CLOSEOUT PROCEDURES

PART 1 GENERAL

1.01 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.

1.02 RELATED DOCUMENTS

- A. General Conditions of the Contract:
 - 1. Substantial Completion.
 - 2. Partial occupancy.
 - 3. Final completion and final payment.
 - 4. One year correction period for Contractor to correct defective work.
- B. Section 01 70 00 - Execution Requirements: Progress cleaning.
- C. Section 01 75 00- Starting and Adjusting: Starting and adjusting items of equipment and complete systems and demonstrations and training for Owner's personnel.
- D. Section 01 78 00 - Closeout Submittals: Submittal of project record documents, operation and maintenance manuals, warranties, certificates of inspection, extra materials, and keys.

1.03 SUBSTANTIAL COMPLETION PROCEDURES

- A. Prior to or in conjunction with submission of Contractor's request for Substantial Completion, submit the following items specified in Section 01 78 00 - Closeout Procedures:
 - 1. Project record documents.
 - 2. Operation and maintenance data and manuals.
 - 3. Warranties.
 - 4. Certificates of inspection.
 - 5. Insurance certificates.
 - 6. Extra materials.
 - 7. Keys.
- B. Comply with General Conditions of the Contract, for issuance of Certificate of Substantial Completion. When Work is sufficiently complete:
 - 1. Inspect Work and prepare comprehensive list of items to be completed or corrected.
 - 2. Perform final cleaning of portions of Work for which approval of substantial completion is being requested.
 - 3. Submit 3 copies of comprehensive list of items to be completed and Final Completion Schedule to Architect. Indicate portions of Work suitable for Owner occupancy and for which approval of substantial completion is being requested.
 - 4. Submit Application for Payment in accordance with Section 01 20 00 - Price and Payment Procedures.
- C. After inspection by Architect and issuance of Certificate of Substantial Completion, Owner will occupy designated portions of building for to conduct normal operations under provisions stated in Certificate of Substantial Completion.

1.04 FINAL COMPLETION PROCEDURES

- A. Perform final cleaning as specified in Paragraph 1.5.
- B. Prior to or in conjunction with submission of Notice of Final Completion, submit the following items:
 - 1. Contractor's Affidavit of Payment of Debts and Claims, AIA G706.
 - 2. Consent of Surety Company to Final Payment, AIA G707.
 - 3. Insurance certificates.

4. Final Application for Payment as specified in Section 01 20 00 - Price and Payment Procedures. Identify total adjusted Contract Sum, previous payments, and sum due.
 5. Additional items required in General Conditions of the Contract.
- C. Submit Notice of Final Completion certifying that Contract Documents have been reviewed, work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect's inspection.
- D. Remove temporary utilities, controls, and facilities in accordance with Section 01 50 00 - Temporary Facilities and Controls.
- E. Request Close-Out Meeting and final inspection with Architect and Owner.

1.05 FINAL CLEANING

- A. Execute final cleaning prior to final inspection by methods and with materials and equipment suitable for commercial/institutional building maintenance.
- B. Clean interior and exterior surfaces exposed to view; remove temporary labels, stains and foreign substances; polish transparent and glossy surfaces; and vacuum carpeted and soft surfaces.
- C. Sanitize equipment and fixtures.
- D. Clean or replace filters of operating equipment.
- E. Clear debris from roof, gutters and drainage systems, ceiling spaces, plenums, storage areas, and interior spaces.
- F. Clean site, sweep paved areas, and rake landscaped areas and other ground surfaces.
- G. Remove waste and surplus materials, rubbish, and construction facilities from the site. Dispose of legally.

1.06 FINAL INSPECTION

- A. Architect and Owner's representative will make inspection within 10 days of receipt of written request for Close-Out Meeting..
- B. If Work is incomplete or defective:
1. Architect will provide Contractor written list of deficiencies.
 2. Contractor shall immediately correct deficiencies and submit certification that Work is complete.
 3. Architect and Owner's representative will re-inspect Work.
 4. Re-inspection fees:
 - a. When status of completion requires re-inspection by Architect due to failure of Work to comply as certified by Contractor, Owner will deduct amount of Architect's compensation for re-inspection from final payment.
 - b. Re-inspection services will be billed at current rates for Architect's personnel.

1.07 CORRECTION PERIOD INSPECTION

- A. 30 days prior to end of one year correction period, schedule and attend a one year correction period inspection. Appropriate subcontractors shall attend.
- B. Coordinate time of inspection with Architect.
- C. Representatives of Owner, Architect, and appropriate consultants will attend.
- D. Correct deficiencies noted.

PART 2 PRODUCTS

2.01 Not Used.

PART 3 EXECUTION

3.01 Not Used.

END OF SECTION

SECTION 01 78 00
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 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.
 - 9. Miscellaneous Security Related Materials and Components

1.02 RELATED DOCUMENTS

- A. General Conditions of the Contract:
 - 1. Contractor's warranty that Work is of good quality and free from defects and conforms to Contract Documents.
 - 2. Commencement of warranties and correction period.
 - 3. Closeout requirements
 - 4. Affidavits and Certificates required before Final Payment
 - 5. One year correction period for Contractor to correct defective work.
- B. Section 01 20 00 - Price and Payment Procedures: Submittal of Applications of Payment.
- C. Section 01 33 00 - Submittal Procedures: Submittal of shop drawings, product data, samples, installation instruction, reports and other submittals during construction prior to closeout.

1.03 PROJECT RECORD DOCUMENTS

- A. Maintain on site, one set of the following record documents; record actual revisions to work:
 - 1. Contract Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed submittals.
- B. Furnish one (1) opaque copy of construction drawings and one (1) copy of Project / Detail manual(s), all marked to indicate how work was actually constructed or installed (as-built), including all addenda, architectural supplemental instructions change order modifications incorporated on project. Record Documents shall good, clean and legible condition. Torn, stained, soiled or damaged copy will not be acceptable. All addenda, architectural supplemental instructions and change order modifications shall be corrected or noted on each document page where the change has occurred along with the associated text "cut and pasted" accordingly. Record drawings shall be bound into one (1) complete set. Store Record Documents separate from documents used for construction. Label "Project Record Documents".
 - 1. Store Record Documents separate from documents used for construction. Label "Project Record Documents".
 - 2. Record information concurrent with construction progress. Use erasable colored pencil. Date all entries. Call attention to entry by circling area affected.
 - 3. Specifications: Legibly mark and record in each section description of actual products installed, including the following:
 - a. Manufacturer's name and product model and number.
 - b. Product substitutions or alternates utilized.
 - c. Changes made by Addenda and modifications.

- d. Contract Drawings and shop drawings: Legibly mark each item to record actual construction including:
 - 1) Actual items of equipment and system components installed.
 - 2) Actual locations of components and routing of piping and raceways.
 - 3) Measured horizontal and vertical locations of underground water, sewer, irrigation, electrical, and other utilities and appurtenances, referenced to permanent surface improvements.
 - 4) Measured locations of piping, raceways, and other items concealed in construction, referenced to visible and accessible features.
 - 5) Field changes of dimension and detail.
 - 6) Details not on original Contract Drawings.
- e. Documents will be reviewed by Architect at each submittal of Application for Payment to ensure that entries are current.
- f. Submit documents to Architect prior to or in conjunction with submission of Contractor's request for Substantial Completion and in accordance with Owner's procedures.

1.04 OPERATION AND MAINTENANCE DATA

- A. Provide operation and maintenance data for:
 - 1. Landscaping specified in Section 32 9300 - Plants.
 - 2. Moisture Protection and Weather Exposed Products:
 - a. Include product data listing applicable reference standards, chemical composition, and details of installation. Include recommendations for inspections, maintenance, and repair.
 - 3. Provide schedule of installed sealants, and manufacturer's recommended maintenance and inspection procedures and schedule for each type of exterior sealant.
 - 4. Provide schedule of installed interior and exterior paint and primer for inclusion in Maintenance Manuals.
 - 5. Provide report of dry film thickness testing of applied exterior paints.
 - 6. Roofing Reports: Provide Manufacturer's Technical Personnel's Final Roof Inspection Report.
 - a. Provide report for any required testing to BECxA for inclusion in final report.
 - 7. Mechanical equipment, systems, and controls specified in Divisions 21, 22, and 23
 - 8. Electrical equipment, systems, and controls specified in Division 26, 27, and 28.
 - 9. 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:
 - 1. MEP Systems:
 - a. Electrical system(s).
 - b. Mechanical system(s).
 - c. Other automated building systems and components.
 - 2. Contents:
 - a. Appropriate design criteria.
 - b. Equipment parts list.

1.05 WARRANTIES

- A. Provide duplicate notarized copies of special and extended warranties as required by individual specifications sections.
- B. Submit warranties to Architect 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.

1.06 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 Architect 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.

1.07 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.

1.08 MAINTENANCE TOOLS

- A. Provide all special tools, instruments, and other implements required for the functional operation and maintenance of equipment, systems, and other components installed as part of this project. Include screw drivers, crescent wrenches, pliers, and allen wrenches as well as more unique and atypical tools.
- 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 017550 - 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.

1.09 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.

1.10 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 rekeying in accordance with Section 08710 - Door Hardware.
 - 2. Access doors and panels.
 - 3. Electrical panelboards and other equipment.
 - a. Provide a minimum of two keys for each lock.
 - b. Clearly label each key as to function and location of lock.
 - c. Obtain receipt from Owner's representative.
- B. 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

2.01 Not Used.

PART 3 EXECUTION

3.01 SUBMISSION

- A. Submit data to Design Professional in one or more binders.
- B. 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.
- C. Once approved, submit copies of final operation and maintenance manuals as follows:
 - 1. 2 hard copies and 2 electronic disk(s) of entire manual to District.
 - 2. All manuals shall be submitted prior to or in conjunction with Contractor's request for Substantial Completion and prior to demonstration and training session.

3.02 FORM

- A. 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.
- B. 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.
- C. 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.
- D. Provide a table of contents for each volume.
- E. 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.
- F. Provide electronic data disk(s) with each manual including all data required to be submitted electronically. Include hard copy with each manual.

END OF SECTION

SECTION 01 79 00
DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes: Training of Owner's designated personnel in operation and maintenance of equipment and systems.

1.02 RELATED DOCUMENTS

- A. Section 01 78 00 - Closeout Submittals: Operation and maintenance manuals.

1.03 SUBMITTALS

- A. Provide in accordance with Section 01 33 00 - 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. 2 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.

1.04 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.
- B. Trainers shall have minimum 5 years of operation experience operating the respective equipment and systems.

PART 2- PRODUCTS

2.01 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

3.01 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.

3.02 DEMONSTRATION AND TRAINING

- A. Provide demonstration and training session to emphasize operation, sequence of operations, use, and maintenance of installed items and systems:
 - 1. Mechanical systems specified in Divisions 21, 22 and 23.
 - 2. Electrical systems specified in Division 26, 27 and 28.
 - 3. 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 78 00 - 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 02 00 05
GEOTECHNICAL DATA

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Geotechnical investigations were performed on behalf of the Owner, at the site of proposed construction in September 2015 and amended in September 2020. These investigations were conducted by GEOMAT, Inc., and the resulting reports have been made available for information and use at the end of this section page.
 - 1. Geotechnical Engineering Report, CCSD Portable Housing Civil Improvements, Mesa Heights Subdivision, Shiprock New Mexico. GEOMAT Project 152-2346
 - 2. GEOMAT Engineering Study - Addendum No. 1, Mesa Heights Subdivision, Shiprock, New Mexico. GEOMAT Project No. 152-2346
- B. This report is included for information only. Neither the the Owner nor the Architect assumes responsibility for the accuracy of the investigation. The data is made available for interpretation by potential Bidders and is not intended as a warranty of continuity of conditions. Recommendations, if any, shall not be construed as contract documents unless specifically stated or referenced in the contract documents.
- C. This data is not intended as a warranty of continuity of conditions between borings. The Owner and the Architect do not assume responsibility for the accuracy of this soils investigation which has been prepared by others, nor for the interpretation of the Data by the Contractor.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION



**GEOTECHNICAL ENGINEERING REPORT
CCSD PORTABLE HOUSING CIVIL IMPROVEMENTS
MESA HEIGHTS SUBDIVISION
SHIPROCK, NEW MEXICO**

Submitted To:

Daniel T. Flack, P.E.
DTF Engineering
344 County Road 6100
Kirtland, New Mexico 87417

Submitted By:

GEOMAT Inc.
915 Malta Avenue
Farmington, New Mexico 87401

September 24, 2015
GEOMAT Project 152-2346



915 Malta Avenue ♦ Farmington, NM 87401 ♦ Tel (505) 327-7928 ♦ Fax (505) 326-5721

September 24, 2015

Daniel T. Flack, P.E.
DTF Engineering
344 County Road 6100
Kirtland, New Mexico 87417

RE: Geotechnical Engineering Study
CCSD Portable Housing Civil Improvements
Mesa Heights Subdivision
Shiprock, New Mexico
GEOMAT Project No. 152-2346

GEOMAT Inc. (GEOMAT) has completed the geotechnical engineering exploration for the CCSD Portable Housing Civil Improvements to be located in the Mesa Heights Subdivision east of the Mesa Elementary School campus in Shiprock, New Mexico. This study was performed in general accordance with our Proposal No. 152-09-05, dated September 4, 2015.

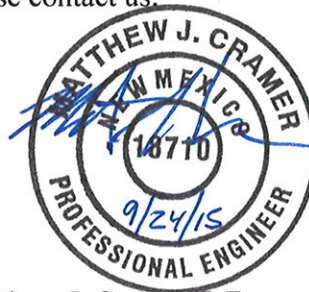
The results of our engineering study, including the geotechnical recommendations, site plan, boring records, and laboratory test results are attached. This report, which is based on our geotechnical engineering analyses, subsurface exploration and laboratory test results, provides information for the design and construction of utilities. Our recommendations for asphalt concrete pavement design are also included in this report.

We have appreciated being of service to you in the geotechnical engineering phase of this project. If you have any questions concerning this report, please contact us.

Sincerely yours,
GEOMAT Inc.

A handwritten signature in blue ink, appearing to read 'Tyler Compton'.

Tyler Compton, EIT
Staff Professional



Matthew J. Cramer, P.E.
Vice President, Geostructural Engineer

Copies to: Addressee (4)

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Site Plan
Logs of Borings
Unified Soil Classification
Drilling and Exploration Procedures

APPENDIX B

Laboratory Test Results
Laboratory Test Procedures

APPENDIX C

Important Information About This Geotechnical Engineering Report (Taken From GBA)

**GEOTECHNICAL ENGINEERING REPORT
CCSD PORTABLE HOUSING CIVIL IMPROVEMENTS
MESA HEIGHTS SUBDIVISION
SHIPROCK, NEW MEXICO
GEOMAT PROJECT NO. 152-2346**

INTRODUCTION

This report contains the results of our geotechnical engineering exploration for the CCSD Portable Housing Civil Improvements to be located in the Mesa Heights Subdivision east of the Mesa Elementary School campus in Shiprock, New Mexico, as shown on the Site Plan in Appendix A of this report.

The purpose of these services is to provide information and geotechnical engineering recommendations about:

- subsurface soil conditions
- groundwater conditions
- lateral soil pressures
- earthwork
- pavement design

The opinions and recommendations contained in this report are based upon the results of field and laboratory testing, engineering analyses, and experience with similar soil conditions, structures, and our understanding of the proposed project as stated below.

PROPOSED CONSTRUCTION

We understand the associated project will include installing 30 to 40 portable housing units. Civil improvements will include designing and constructing water and sewer lines to service the new portable housing units. Also, we understand that asphalt concrete paving may be provided for the new units. It is expected that cuts/fills of roughly 5 feet will be required to achieve final site grades.

SITE EXPLORATION

Our scope of services performed for this project included a site reconnaissance by a staff professional, a subsurface exploration program, laboratory testing and engineering analyses.

Field Exploration:

Subsurface conditions at the site were explored on September 14, 2015 by drilling six exploratory borings, designated B-1 through B-6, at the approximate locations shown on the Site Plan in Appendix A. Borings B-1 and B-2 were drilled to depths of approximately 15 feet below existing ground surface (bgs) on the west side of the site. Borings B-3 and B-4 were drilled to depths of approximately 10 feet bgs toward the center on the site. Borings B-5 and B-6 were drilled to depths of approximately 5 feet bgs on the east side of the site. All borings were drilled to their planned depths.

The borings were advanced using a CME-45 truck-mounted drill rig with continuous-flight, 7.25-inch O.D. hollow-stem auger. The borings were continuously monitored by a professional from our office who examined and classified the subsurface materials encountered, obtained representative samples, observed groundwater conditions, and maintained a continuous log of each boring.

Soil samples were obtained from the borings using a standard 2-inch O.D. split spoon sampler. The sampler was driven using a 140-pound hammer falling 30 inches. The standard penetration resistance was determined by recording the number of hammer blows required to advance the sampler in six-inch increments. Representative bulk samples of subsurface materials were also obtained.

Groundwater evaluations were made in each boring at the time of site exploration. Soils were classified in accordance with the Unified Soil Classification System described in Appendix A. Boring logs were prepared and are presented in Appendix A.

Laboratory Testing:

Samples retrieved during the field exploration were transported to our laboratory for further evaluation. At that time, the field descriptions were confirmed or modified as necessary, and laboratory tests were performed to evaluate the engineering properties of the subsurface materials.

SITE CONDITIONS

The site is located approximately 1 mile north of the intersection of US Highway 64 and US Highway 491, roughly 1,700 feet east of US Highway 491. The site is an undeveloped lot east of Mesa Elementary School. Residential housing units bound the site to the north, and the site is bound to the south by a cemetery. The land east of the site is undeveloped. The ground surface across the site sloped down to the south, with an estimated elevation differential of 5 to 10 feet across the site. It appeared that there had already been 3 to 4 feet of cut at portions along the

north side of the site. At the time of our exploration approximately a half dozen portable buildings sat along the north side of the site. They did not appear to be in use. The ground surface contained occasional gravel, and was vegetated by a sparse to moderate growth of weeds. The following photograph depicts the site at the time of our exploration.



**Drill Rig at Boring B-4
View to the Northwest**

SUBSURFACE CONDITIONS

Soil Conditions:

As presented on the Boring Logs in Appendix A, we encountered very loose to medium dense silty sand soils in all of the borings from the ground surface to the total depths explored. The sandy soils were generally dry to damp.

In borings B-1, B-2, B-3, and B-6 the silty sand soils contained varying amounts of gravels. The existence of coarse-grained gravel was noted in boring B-1 at approximately 1.5 feet bgs, boring B-2 at 3.5 feet bgs, and boring B-6 at approximately 1 foot bgs. However, the gravels were relatively loosely dispersed in the silty sand soils.

In boring B-4, we encountered interbedded layers and/or lenses of clay soils in the silty sand soils at a depth of approximately 6.5 feet bgs. The clay layers/lenses were noted as approximately 1-inch thick.

Groundwater Conditions:

Groundwater was not encountered in the borings to the depths explored. Groundwater elevations can fluctuate over time depending upon precipitation, irrigation, runoff and infiltration of surface water. We do not have any information regarding the historical fluctuation of the groundwater level in this vicinity.

Laboratory Test Results:

Laboratory analyses of samples tested indicate the silty sand soils have non-plastic fines contents (silt- and/or clay-sized particles passing the U.S. No. 200 sieve) ranging from approximately 14 to 24 percent.

Results of all laboratory tests are presented in Appendix B.

OPINIONS AND RECOMMENDATIONS

Geotechnical Considerations:

Construction of civil improvements is considered feasible based on the geotechnical conditions encountered and tested for this report. If there are any significant deviations from the anticipated project as described at the beginning of this report, the opinions and recommendations of this report should be reviewed and confirmed/modified as necessary to reflect the final planned design conditions.

The onsite silty sand soils are expected to be suitable for use as pipe bedding, shading, backfill, and site grading. However, coarse-grained gravels (larger than 3/4") should be excluded from pipe bedding and shading material, and cobbles (larger than 3") should be removed from material used for trench backfill and/or below pavements. Care should be taken and special techniques may be required to segregate oversize material. All materials should be tested for compliance with the materials recommendations of the report before use.

Pavement Design and Construction:

We are presenting options for both flexible (asphalt) and rigid (concrete) pavement sections. We are also presenting a heavy-duty rigid pavement section for areas that will be subjected to heavy, sustained, concentrated loads, such as dumpsters.

Design of pavements for the project has been based on the procedures outlined in the Guideline for Design of Pavement Structures by the American Association of State Highway and Transportation Officials (AASHTO), and on the Guide for the Design and Construction of

Concrete Parking Lots by the American Concrete Institute (ACI 330). The pavement design is also based on the properties of the existing site soils. If other soil types are encountered during construction or if imported fill soils will be required to achieve the finished site grades, we should be contacted for possible revised recommendations.

The recommended pavement sections are presented in the tables below.

Recommended Pavement Sections for Light Vehicle Parking Areas			
Option	Hot Mix Asphalt (inches)	Aggregate Base Course (inches)	Portland Cement Concrete (inches)
Asphalt	2.5	5.0	N/A
Concrete	N/A	N/A	4.0

Recommended Heavy Duty Pavement Section	
Portland Cement Concrete (inches)	Aggregate Base Course (inches)
6.0	N/A

Construction Recommendations for Flexible Pavements:

The subgrade should be proof-rolled using a heavy vehicle such as a loaded dump truck or water truck prior to paving, and any soft or pumping areas should be repaired by removing and replacing the soft material with suitable fill.

Aggregate base should conform to Type I Base Course as specified in Section 303 of the 2014 New Mexico Department of Transportation (NMDOT) “*Standard Specifications for Road and Bridge Construction.*”

Aggregate base course should be placed in lifts not exceeding six inches and should be compacted to a minimum of 95% Modified Proctor density (ASTM D-1557), within a moisture content range of 4 percent below, to 2 percent above optimum. In any areas where base course thickness exceeds 6 inches, the material should be placed and compacted in two or more lifts of equal thickness.

If the hot-mix asphalt is placed in more than one mat, the surface of each underlying mat should be treated with a tack coat immediately prior to placement of the subsequent mat of hot-mix asphalt.

Asphalt concrete should be obtained from an engineer-approved mix design prepared in accordance with NMDOT specifications. The hot-mix paving should be placed and compacted in accordance with NMDOT specifications.

Construction Recommendations for Rigid Pavements:

The subgrade should be proof-rolled using a heavy vehicle such as a loaded dump truck or water truck prior to paving, and any soft or pumping areas should be repaired by removing and replacing the soft material with suitable fill.

Concrete should be placed directly on the prepared subgrade. Reinforcing steel is not required or recommended for rigid pavement sections. Concrete used for pavement sections should have a minimum 28-day compressive strength of 4,000 pounds per square inch (psi). Contraction joints should be provided to control the extent and location of cracking due to tensile stresses. The maximum recommended joint spacing is 10 feet.

General Pavement Considerations:

The performance of the recommended pavement sections can be enhanced by minimizing excess moisture that can reach the subgrade soils. The following recommendations should be considered at minimum:

- Site grading at a minimum 2% grade away from the pavements;
- Compaction of any utility trenches to the same criteria as the pavement subgrade.

The recommended pavement sections are considered minimal sections based on the anticipated traffic volumes and the subgrade conditions encountered during our exploration. They are expected to perform adequately when used in conjunction with preventive maintenance and good drainage. Preventive maintenance activities are intended to slow the rate of pavement deterioration and to preserve the pavement investment.

Slopes:

Assuming fill specifications, compaction requirements, and recommended setbacks provided in this report are followed, cut and fill slopes as steep as to 2.5:1 (horizontal:vertical) should be stable. Depending upon specific project conditions, adequate factors of safety against slope failure may be available for steeper configurations. However, such a determination would require additional analysis.

EARTHWORK:

General Considerations:

All earthwork and pipe installation should be in accordance with New Mexico Standard Specifications for Public Works Construction (NMSSPWC) Section 700. The opinions

contained in this report for the proposed construction are contingent upon compliance with recommendations presented in this section of the NMSSPWC. Although underground facilities such as foundations, septic tanks, cesspools, basements, and irrigation systems were not encountered during site reconnaissance, such features could exist and might be encountered during construction.

Site Clearing:

1. If unexpected fills or underground facilities are encountered during site clearing, we should be contacted for further recommendations. All excavations should be observed by GEOMAT prior to backfill placement.
2. Stripped materials consisting of vegetation and organic materials should be removed from the site, or used to re-vegetate exposed slopes after completion of grading operations. If it is necessary to dispose of organic materials on-site, they should be placed in non-structural areas, and in fill sections not exceeding 5 feet in height.
3. Sloping areas steeper than 5:1 (horizontal:vertical) should be benched to reduce the potential for slippage between existing slopes and fills. Benches should be level and wide enough to accommodate compaction and earth moving equipment.

Excavation:

We present the following general comments regarding our opinion of the excavation conditions for the designers' information with the understanding that they are opinions based on our boring data. Our borings were advanced using a 7.25-inch O.D. continuous-flight auger; the relative ease or difficulty of excavation may be significantly different using other types of equipment and techniques. More accurate information regarding the excavation conditions should be evaluated by contractors or other interested parties from test excavations using the equipment that will be used during construction. Based on our subsurface evaluation it appears that excavations in the sandy soils will be possible using standard excavation equipment.

Excavations into loose sandy soils deeper than a few feet may experience caving or sloughing. Sloping, shoring, or bracing of excavation walls may be necessary to maintain safe, stable excavations.

Excavation Safety:

Construction of stable temporary excavations is the responsibility of the contractor. Temporary slopes and excavations should be designed and constructed in accordance with the Department of Labor Occupational Safety and Health Administration 29 CFR Part 1926, Subpart P,

Occupational Safety and Health Standards – Excavations (“OSHA Construction Standards for Excavations”).

According to OSHA Construction Standards for Excavations, all excavations greater than four feet in depth must be sloped, shored, or braced. Spoils must be placed at least two feet from the edge of the excavation to reduce the potential for sidewall failure due to excessive lateral pressures. Other details regarding excavation safety, as described in Subpart P, shall be followed.

Conditions affecting stability of slopes and excavations can change over time depending on variables such as weather, vibration or surcharges due to nearby equipment, etc. A Competent Person (as defined in subpart P) shall monitor and assess conditions affecting soil stability during construction.

Dewatering:

Groundwater was not encountered during our site reconnaissance, and is not expected to be encountered during trenching operations. Should water enter excavations, dewatering may be required to facilitate stable excavations. Water should be removed from the excavation using pumps, well points, or similar techniques, and either contained or discharged to a lower point.

Pipe Foundation:

Pipes should be bedded on a stable subgrade which is free of water. Any areas where pumping soils or otherwise unstable subgrade conditions are encountered must be stabilized before laying pipe. If such conditions are encountered during construction, GEOMAT should be contacted to provide specific recommendations for stabilization.

Pipe Embedment:

As required in the NMSSPWC specifications, a minimum thickness of eight (8.0) inches of embedment (bedding) material should be placed on top of the subgrade to support and protect the pipe. Once the pipe has been placed and aligned, shading material should be placed to a minimum of eight (8.0) inches above the top of the pipe. Slicing, hand tamping, or similar techniques should be employed to ensure that the bedding material completely supports the haunch of the pipe.

Embedment material below the pipe should be compacted to a minimum density of 95 percent of the ASTM D 1557 maximum dry density. To avoid damage to the pipe, mechanical compaction equipment should not be used over the pipe in the embedment zone.

Embedment material should be a granular soil such as sand or fine-grained gravel. It should be free of coarse-grained gravel particles or cobbles. Silt, clay, or organic soils are not suitable for use as embedment material. Soils used for embedment should have a fines content (percentage of silt and/or clay-sized particles passing the U.S. No. 200 sieve) of less than 50 percent.

Alternatively, flowable fill could be used as embedment material. The use of flowable fill could be appropriate in situations where placing personnel and/or compaction equipment in excavations is impractical due to closely-spaced adjacent utilities or unstable excavations.

Backfill:

Excavations should be backfilled to the planned finished grades using native or imported soils that are free of debris, rubble, frozen soil, organic material, or other deleterious material. Fill material should be free of cobbles or boulders greater than three inches in diameter.

Backfill material should be compacted to a minimum of 90 percent of the maximum dry density as determined by ASTM D 1557. In areas where the final backfill is located under pavements or other structures, the upper two (2.0) feet of backfill material should be compacted to 95 percent of the D 1557 maximum dry density. Soils should be compacted at moisture contents near optimum. Material should be placed in horizontal lifts in thicknesses that permit compaction to the required densities with the equipment being used.

Fill Materials:

1. Native or imported soils could be used as fill material for the following:
 - general site grading
 - pipe bedding and shading
 - pavement areas
 - trench backfill
2. On site or imported soils to be used in trench backfill and/or below pavement areas should conform to the following gradation:

<u>Gradation</u>	<u>Percent finer by weight (ASTM C136)</u>
3"	100
No. 4 Sieve	50-100
No. 200 Sieve	50 Max

3. On site or imported soils to be used as pipe bedding or shading should conform to the following gradation:

<u>Gradation</u>	<u>Percent finer by weight (ASTM C136)</u>
3/4"	100
No. 4 Sieve	50-100
No. 200 Sieve	50 Max

4. Aggregate base should conform to Section 303 of 2014 NMDOT specifications for Type I Base Course.

Placement and Compaction:

1. Place and compact fill in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift.
2. Un-compacted fill lifts should not exceed 10 inches loose thickness.
3. Materials should be compacted to the following:

<u>Material</u>	<u>Minimum Percent (ASTM D1557)</u>
Subgrade soils beneath fill areas	95
On site or imported soil fills:	
Beneath pavements	95
Aggregate base beneath pavements	95
Pipe bedding	95
Trench backfill more than 2 ft below pavements	90
Miscellaneous backfill.....	90

4. On-site and imported soils should be compacted at moisture contents near optimum.

Compliance:

The recommendations in this report depend upon compliance with **Earthwork** recommendations. To assess compliance, observation and testing should be performed by GEOMAT.

GENERAL COMMENTS

It is recommended that GEOMAT be retained to provide a general review of final design plans and specifications in order to confirm that grading and backfill recommendations in this report have been interpreted and implemented. In the event that any changes of the proposed project are planned, the opinions and recommendations contained in this report should be reviewed and the report modified or supplemented as necessary.

GEOMAT should also be retained to provide services during excavation, grading, and construction phases of the work. Construction testing, including field and laboratory evaluation of fill, backfill, pavement materials, concrete and steel should be performed to determine whether applicable project requirements have been met.

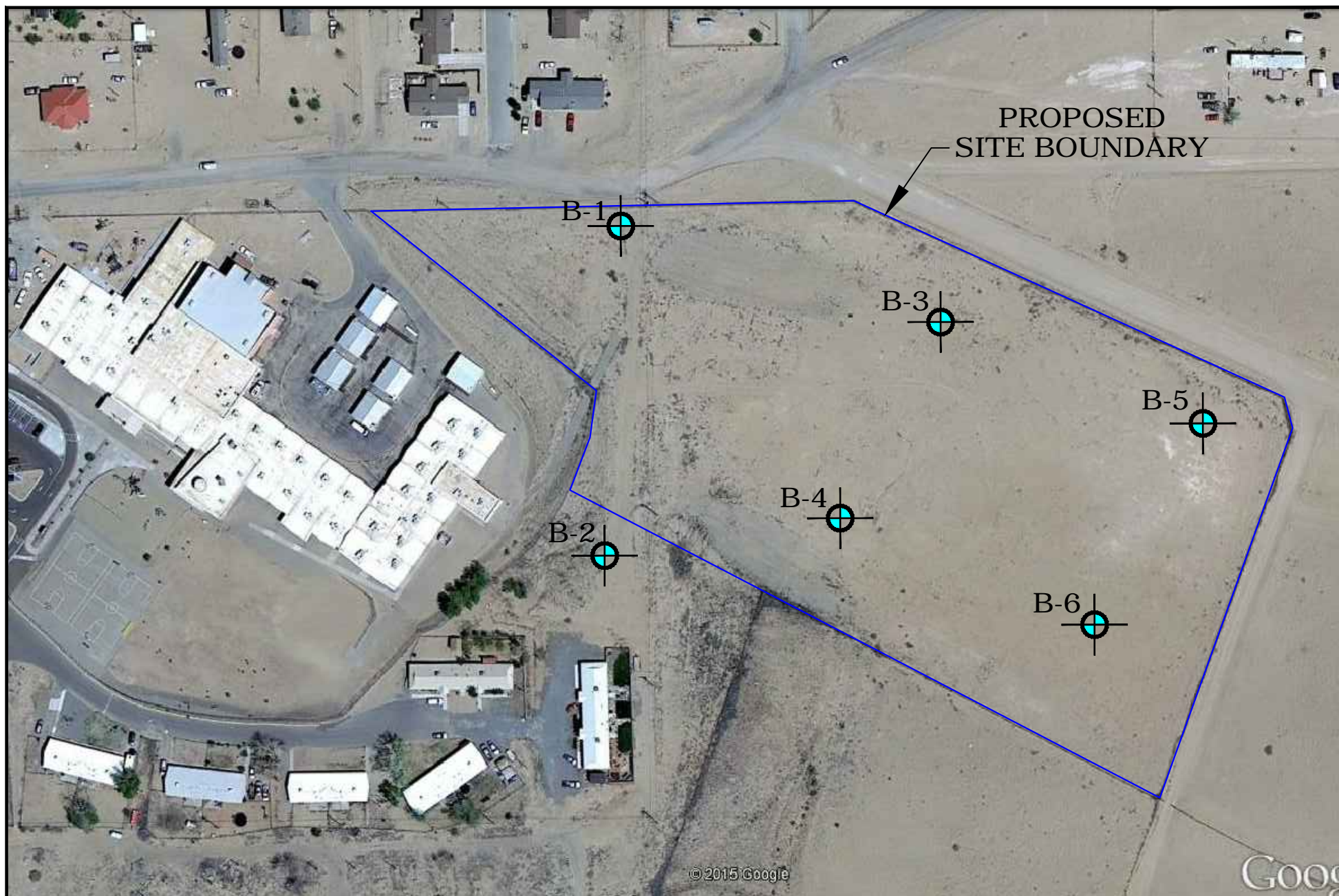
The analyses and recommendations in this report are based in part upon data obtained from the field exploration. The nature and extent of variations beyond the location of test borings may not become evident until construction. If variations then appear evident, it may be necessary to re-evaluate the recommendations of this report.

Our professional services were performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical engineers practicing in this or similar localities at the same time. No warranty, express or implied, is intended or made. We prepared the report as an aid in design of the proposed project. This report is not a bidding document. Any contractor reviewing this report must draw his own conclusions regarding site conditions and specific construction equipment and techniques to be used on this project.

This report is for the exclusive purpose of providing geotechnical engineering and/or testing information and recommendations. The scope of services for this project does not include, either specifically or by implication, any environmental assessment of the site or identification of contaminated or hazardous materials or conditions. If the owner is concerned about the potential for such contamination, other studies should be undertaken. This report has also not addressed any geologic hazards that may exist on or near the site.

This report may be used only by the Client and only for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both on and off site), or other factors may change over time and additional work may be required with the passage of time. Any party, other than the Client, who wishes to use this report, shall notify GEOMAT in writing of such intended use. Based on the intended use of the report, GEOMAT may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements, by the Client or anyone else, will release GEOMAT from any liability resulting from the use of this report by an unauthorized party.

Appendix A



 Approximate	SITE PLAN	PROJECT	
	Boring Locations (approximate)	CCSD Portable Housing Civil Improvements	
	GEOMAT Project No. 152-2346 Date of Exploration: September 14, 2015	Mesa Heights Subdivision Shiprock, New Mexico	
Not to Scale			



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Borehole B-1

Page 1 of 1

Project Name: <u>CCSD Portables Civil Improvements</u>	Date Drilled: <u>9/14/2015</u>
Project Number: <u>152-2346</u>	Latitude: <u>Not Determined</u>
Client: <u>DTF Engineering</u>	Longitude: <u>Not Determined</u>
Site Location: <u>Shiprock, New Mexico</u>	Elevation: <u>Not Determined</u>
Rig Type: <u>CME-45</u>	Boring Location: <u>See Site Plan</u>
Drilling Method: <u>7.25" O.D. Hollow Stem Auger</u>	Groundwater Depth: <u>None Encountered</u>
Sampling Method: <u>Bulk and Split spoon samples</u>	Logged By: <u>TC</u>
Hammer Weight: <u>140 lbs</u>	Remarks: <u>None</u>
Hammer Fall: <u>30 inches</u>	

Laboratory Results					Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)								
	24	NP				A				1	SILTY SAND, brown-red, fine-grained, loose, dry to slightly damp with gravel, fine- to medium-grained tan-yellow with trace gravel
				4-4-5	SS 18					2	
										3	
				3-3-3	SS 18					4	
										5	
										6	
										7	
								SM		8	
										9	
				4-4-5	SS 18					10	
										11	
										12	
										13	
										14	
				4-5-4	SS 18					15	
										16	
										17	Total Depth 16.5 feet
										18	
										19	
										20	

A = Auger Cuttings MC = Modified California (Ring Sample) SS = Split Spoon CS = 5 ft Continuous Barrel Sampler bgs = below ground surface



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Borehole B-2

Page 1 of 1

Project Name: <u>CCSD Portables Civil Improvements</u>	Date Drilled: <u>9/14/2015</u>
Project Number: <u>152-2346</u>	Latitude: <u>Not Determined</u>
Client: <u>DTF Engineering</u>	Longitude: <u>Not Determined</u>
Site Location: <u>Shiprock, New Mexico</u>	Elevation: <u>Not Determined</u>
Rig Type: <u>CME-45</u>	Boring Location: <u>See Site Plan</u>
Drilling Method: <u>7.25" O.D. Hollow Stem Auger</u>	Groundwater Depth: <u>None Encountered</u>
Sampling Method: <u>Bulk and Split spoon samples</u>	Logged By: <u>TC</u>
Hammer Weight: <u>140 lbs</u>	Remarks: <u>None</u>
Hammer Fall: <u>30 inches</u>	

Laboratory Results				Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)							
	24	NP		4-7-9	A SS 18		SM		1	SILTY SAND, brown, fine- to coarse-grained, medium dense, damp
									2	
									3	
									4	with gravel
				8-8-8	SS 18				5	
									6	
									7	
									8	tan-yellow, fine- to medium-grained
									9	
				4-5-7	SS 18				10	with trace gravel
									11	
									12	
									13	
									14	
				10-10-50/5"	SS 17				15	with gravel
									16	
									17	sampler refusal on coarse gravel
									18	Total Depth 16.4 feet
									19	
									20	

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Borehole B-3

Page 1 of 1

Project Name: CCSD Portables Civil Improvements Date Drilled: 9/14/2015
 Project Number: 152-2346 Latitude: Not Determined
 Client: DTF Engineering Longitude: Not Determined
 Site Location: Shiprock, New Mexico Elevation: Not Determined
 Rig Type: CME-45 Boring Location: See Site Plan
 Drilling Method: 7.25" O.D. Hollow Stem Auger Groundwater Depth: None Encountered
 Sampling Method: Split spoon sample Logged By: TC
 Hammer Weight: 140 lbs Remarks: None
 Hammer Fall: 30 inches

Laboratory Results					Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)								
				3-4-5	SS 18					1	SILTY SAND, tan-yellow, fine- to coarse-grained, loose, slightly damp
										2	
										3	
										4	
				3-5-6	SS 18			SM		5	medium dense
										6	
										7	
										8	
										9	with trace gravel, loose
				2-4-5	SS 18					10	
										11	
										12	Total Depth 11.5 feet
										13	
										14	
										15	

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Borehole B-4

Page 1 of 1

Project Name: CCSD Portables Civil Improvements Date Drilled: 9/14/2015
Project Number: 152-2346 Latitude: Not Determined
Client: DTF Engineering Longitude: Not Determined
Site Location: Shiprock, New Mexico Elevation: Not Determined
Rig Type: CME-45 Boring Location: See Site Plan
Drilling Method: 7.25" O.D. Hollow Stem Auger Groundwater Depth: None Encountered
Sampling Method: Split spoon sample Logged By: TC
Hammer Weight: 140 lbs Remarks: None
Hammer Fall: 30 inches

Laboratory Results					Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)								
				2-4-3	SS 18					1	SILTY SAND, tan-red, fine- to medium-grained, medium dense, slightly damp
										2	tan-yellow, fine- to coarse-grained, loose
				2-4-4	SS 18			SM		3	
										4	
										5	
										6	
										7	with interbedded layers/lenses of clay
										8	
										9	
				2-4-5	SS 18					10	
										11	
										12	Total Depth 11.5 feet
										13	
										14	
										15	

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Borehole B-5

Page 1 of 1

Project Name: CCSD Portables Civil Improvements Date Drilled: 9/14/2015
Project Number: 152-2346 Latitude: Not Determined
Client: DTF Engineering Longitude: Not Determined
Site Location: Shiprock, New Mexico Elevation: Not Determined
Rig Type: CME-45 Boring Location: See Site Plan
Drilling Method: 7.25" O.D. Hollow Stem Auger Groundwater Depth: None Encountered
Sampling Method: Bulk and Split spoon samples Logged By: TC
Hammer Weight: 140 lbs Remarks: None
Hammer Fall: 30 inches

Laboratory Results				Blows per 6"	Sample Type & Length (in)	Recovery	USCS	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)							
	14	NP			A				1	SILTY SAND, tan-yellow, fine- to coarse-grained, medium dense, slightly damp
				4-6-6	SS 18		SM		2	
									3	
									4	
				2-5-5	SS 18				5	loose to medium dense
									6	
									7	Total Depth 6.5 feet
									8	
									9	
									10	

A = Auger Cuttings MC = Modified California (Ring Sample) SS = Split Spoon CS = 5 ft Continuous Barrel Sampler bgs = below ground surface

UNIFIED SOIL CLASSIFICATION SYSTEM							CONSISTENCY OR RELATIVE DENSITY CRITERIA				
Major Divisions				Group Symbols	Typical Names						
Coarse-Grained Soils More than 50% retained on No. 200 sieve	Gravels 50% or more of coarse fraction retained on No. 4 sieve	Clean Gravels	GW	Well-graded gravels and gravel-sand mixtures, little or no fines		Penetration Resistance, N (blows/ft.)	<u>Standard Penetration Test</u> Density of Granular Soils				
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines							
		Gravels with Fines	GM	Silty gravels, gravel-sand-silt mixtures			0-4	Very Loose			
			GC	Clayey gravels, gravel-sand-clay mixtures			5-10	Loose			
	Sands More than 50% of coarse fraction passes No. 4 sieve	Clean Sands	SW	Well-graded sands and gravelly sands, little or no fines			11-30	Medium Dense			
			SP	Poorly graded sands and gravelly sands, little or no fines			31-50	Dense			
		Sands with Fines	SM	Silty sands, sand-silt mixtures			>50	Very Dense			
			SC	Clayey sands, sand-clay mixtures			<u>Standard Penetration Test</u> Density of Granular Soils				
			Fine-Grained Soils 50% or more passes No. 200 sieve	Silts and Clays Liquid Limit 50 or less			ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands		Penetration Resistance, N (blows/ft.)	Consistency
CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays										
OL	Organic silts and organic silty clays of low plasticity										
Silts and Clays Liquid Limit greater than 50		MH		Inorganic silts, micaceous or diatomaceous free sands or silts, elastic silts		2-4	Soft	0.25-0.50			
		4-8		Firm	0.50-1.00						
		8-15		Stiff	1.00-2.00						
		15-30		Very Stiff	2.00-4.00						
		Highly Organic Soils		PT	Peat, mucic & other highly organic soils		>30	Hard	>4.0		
U.S. Standard Sieve Sizes											
>12"	12"	3"	3/4"	#4	#10	#40	#200				
Boulders	Cobbles	Gravel		Sand			Silt or Clay				
		coarse	fine	coarse	medium					fine	

MOISTURE CONDITIONS

Dry	Absence of moist, dusty, dry to the touch
Slightly Damp	Below optimum moisture content for compaction
Moist	Near optimum moisture content, will moisten the hand
Very Moist	Above optimum moisture content
Wet	Visible free water, below water table

MATERIAL QUANTITY

trace	0-5%
few	5-10%
little	10-25%
some	25-45%
mostly	50-100%

OTHER SYMBOLS

R	Ring Sample
S	SPT Sample
B	Bulk Sample
▼	Ground Water

BASIC LOG FORMAT:

Group name, Group symbol, (grain size), color, moisture, consistency or relative density. Additional comments: odor, presence of roots, mica, gypsum, coarse particles, etc.

EXAMPLE:

SILTY SAND w/trace silt (SM-SP), Brown, loose to med. Dense, fine to medium grained, damp

UNIFIED SOIL CLASSIFICATION SYSTEM

TEST DRILLING EQUIPMENT & PROCEDURES


Description of Subsurface Exploration Methods

Drilling Equipment – Truck-mounted drill rigs powered with gasoline or diesel engines are used in advancing test borings. Drilling through soil or softer rock is performed with hollow-stem auger or continuous flight auger. Carbide insert teeth are normally used on bits to penetrate soft rock or very strongly cemented soils which require blasting or very heavy equipment for excavation. Where refusal is experienced in auger drilling, the holes are sometimes advanced with tricone gear bits and NX rods using water or air as a drilling fluid.

Sampling Procedures - Dynamically driven tube samples are usually obtained at selected intervals in the borings by the ASTM D1586 test procedure. In most cases, 2" outside diameter, 1 3/8" inside diameter, samplers are used to obtain the standard penetration resistance. "Undisturbed" samples of firmer soils are often obtained with 3" outside diameter samplers lined with 2.42" inside diameter brass rings. The driving energy is generally recorded as the number of blows of a 140-pound, 30-inch free fall drop hammer required to advance the samplers in 6-inch increments. These values are expressed in blows per foot on the boring logs. However, in stratified soils, driving resistance is sometimes recorded in 2- or 3-inch increments so that soil changes and the presence of scattered gravel or cemented layers can be readily detected and the realistic penetration values obtained for consideration in design. "Undisturbed" sampling of softer soils is sometimes performed with thin-walled Shelby tubes (ASTM D1587). Tube samples are labeled and placed in watertight containers to maintain field moisture contents for testing. When necessary for testing, larger bulk samples are taken from auger cuttings. Where samples of rock are required, they are obtained by NX diamond core drilling (ASTM D2113).

Boring Records - Drilling operations are directed by our field engineer or geologist who examines soil recovery and prepares boring logs. Soils are visually classified in accordance with the Unified Soil Classification System (ASTM D2487), with appropriate group symbols being shown on the logs.

Appendix B

LAB NO.	TEST BORING NO.	SAMPLE DEPTH (ft)	SIEVE ANALYSIS, CUMULATIVE PERCENT PASSING											ATTERBERG LIMITS			CLASSIFICATION
			3/8"	1/4"	No. 4	No. 8	No. 10	No. 16	No. 30	No. 40	No. 50	No. 100	No. 200	LL	PL	PI	
3270	B-1	0-2.5											24	NLL	NPL	NP	Silty SAND (SM)
3271	B-2	5.0											24	NLL	NPL	NP	Silty SAND (SM)
3272	B-5	0-2.5	100	100	100	98	97	90	67	53	38	20	14	NLL	NPL	NP	Silty SAND (SM)
									SUMMARY OF SOIL TESTS					Project		CCSD Portable Housing Civil Improvements	
														Job No.		152-2346	
														Location		Shiprock, New Mexico	
														Date Drilled		9/14/2015	

LABORATORY TESTING PROCEDURES

Consolidation Tests: One-dimensional consolidation tests are performed using “Floating-ring” type consolidometers. The test samples are approximately 2.5 inches in diameter and 1.0 inch high and are usually obtained from test borings using the dynamically-driven ring samplers. Test procedures are generally as outlined in ASTM D2435. Loads are applied in several increments to the upper surface of the test specimen and the resulting deformations are recorded at selected time intervals for each increment. Samples are normally loaded in the in-situ moisture conditions to loads which approximate the stresses which will be experienced by the soils after the project is completed. Samples are usually then submerged to determine the effect of increased moisture contents on the soils. Each load increment is applied until compression/expansion of the sample is essentially complete (normally movements of less than 0.0003 inches/hour). Porous stones are placed on the top and bottom surfaces of the samples to facilitate introduction of the moisture.

Expansion Tests: Tests are performed on either undisturbed or recompacted samples to evaluate the expansive potential of the soils. The test samples are approximately 2.5 inches in diameter and 1.0 inch high. Recompacted samples are typically remolded to densities and moisture contents that will simulate field compaction conditions. Surcharge loads normally simulate those which will be experienced by the soils in the field. Surcharge loads are maintained until the expansion is essentially complete.

Atterberg Limits/Maximum Density/Optimum Moisture Tests: These tests are performed in accordance with the prescribed ASTM test procedures.

Appendix C

Important Information about This Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply this report for any purpose or project except the one originally contemplated.*

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an

assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by:* the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time to perform additional study.* Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help

others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Environmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold- prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical- engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with you GBC-Member geotechnical engineer for more information.



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September 11, 2020

Candice Thompson

Central Consolidated School District (CCSD)

P.O. Box 1199

Shiprock, New Mexico 87420

RE: Geotechnical Engineering Study –Addendum No. 1

Mesa Heights Subdivision

Shiprock, New Mexico

GEOMAT Project No. 152-2346

The purpose of this letter report is to present updated information regarding the subsurface conditions and provided updated foundation recommendations for the proposed subdivision in Shiprock, NM. The information presented in this addendum includes additional subsurface and laboratory data to supplement our Geotechnical Engineering Report No. 152-2346, dated September 24, 2015. Those services were performed for DTF Engineering, however, it is our understanding that CCSD contracted DTF Engineering for a pass through of the geotechnical engineering services and that permissions for use of the report are in place. This letter report should be considered as Addendum No. 1 to that report and made a part thereof.

We understand the proposed development at the site now includes an estimated 30 single story residential units ranging in plan size from 940 to 1,254 square feet. The maximum column and wall loads are 3 kips and 1.5 kips per linear foot, respectively. The project will also include retaining walls that are approximately 5 feet in height.

The additional boring locations were analyzed in a similar manner as the original report for civil improvements. However, an emphasis was placed on obtaining ring samples to conduct laboratory testing associated with these particular samples. The findings of the original report were used in the conjunction with the findings in these additional services to develop recommendations for foundation design, slab support, and related earthwork.

Subsurface Conditions:

As presented on the attached boring logs, in all three additional borings, B-7 through B-9, we encountered silty sand material from the ground surface extending to the total depths explored in the borings (approximately 15 feet). The sand was generally very loose to medium dense, and contained trace gravel.

Laboratory Test Results:

Laboratory analyses of samples tested indicate the silty sand soils have in-place dry densities ranging from approximately 92 to 102 pounds per cubic foot (pcf), with natural moisture contents between approximately 1 and 3 percent.

Laboratory consolidation/expansion testing was performed on undisturbed ring samples of the subgrade soils beneath the proposed buildings. Results of these tests indicate that the sandy soils undergo slight compression when subjected to anticipated foundation stresses at the existing moisture contents. When subjected to increased moisture conditions at these stresses, they undergo slight to moderate additional compression.

Results of all laboratory tests are presented in Appendix B.

OPINIONS AND RECOMMENDATIONS

Geotechnical Considerations:

The site is considered suitable for the proposed subdivision based on the geotechnical conditions encountered and tested for this report. To reduce the potential for settlement and provide more uniform and higher allowable bearing pressures, the footings should bear on compacted native soils.

Other foundation systems, including post-tension slabs and deep foundations, were also considered for the project. However, based upon the geotechnical conditions encountered and tested for this report, it is our opinion that conventional shallow spread footings will be the most economical foundation type for the project. Recommendations for other foundations types can be provided upon request.

If there are any significant deviations from the assumed floor elevations, structure locations and/or loads noted at the beginning of this report, the opinions and recommendations of this report should be reviewed and confirmed/modified as necessary to reflect the final planned design conditions.

Foundations:

Based on our understanding of the type of structure to be built and the results of our field subsurface exploration and laboratory testing, the residences and retaining walls could be founded on conventional shallow spread footings bearing on compacted native soils. The native soils should be moisture conditioned as necessary, and compacted in lifts such that the upper one (1.0) foot soil below the foundations are a minimum of 95 percent of their maximum dry density

as determined by ASTM D1557 at near optimum moisture contents. See the **Earthwork** section of the original report for additional information.

The recommended design bearing capacities and footing depths are presented in the following table.

Footing Depth¹ (ft)	Allowable Bearing Pressure (psf)	Bearing Soil
2.5²	2,000	Compacted Native Soils
3.0	2,500	Compacted Native Soils

¹Footing depth referenced below lowest adjacent finished grade or lowest scour depth, whichever is deeper. Finished grade is the lowest adjacent grade.

²Minimum footing depth for frost protection.

Total and differential settlements resulting from the assumed structural loads are estimated to be on the order of ½ inch or less. Proper drainage should be provided in the final design and during construction and areas adjacent to the structure should be designed to prevent water from ponding or accumulating next to the structure.

Total and differential settlements should not exceed predicted values, provided that:

- Foundations are constructed as recommended, and
- Essentially no changes occur in water contents of foundation soils.

For foundations adjacent to descending slopes, a minimum horizontal setback of five (5) feet should be maintained between the foundation base and slope face. In addition, the setback should be such that an imaginary line extending downward at 45 degrees from the nearest foundation edge does not intersect the slope.

Footings and foundations should be reinforced as necessary to reduce the potential for distress caused by differential foundation movement.

Foundation excavations should be observed by GEOMAT. If the soil conditions encountered differ significantly from those presented in this report, supplemental recommendations will be required.

Site Classification:

Based on the subsurface conditions encountered in the borings, we estimate that Site Class D is appropriate for the site according to the 2018 International Building Code. This parameter was estimated based on extrapolation of data beyond the deepest depth explored, using methods allowed by the code. Actual shear wave velocity testing/analysis and/or exploration to a depth of 100 feet were not performed as part of our scope of services for this project.

Lateral Earth Pressures:

For soils above any free water surface, recommended equivalent fluid pressures for unrestrained foundation elements are presented in the following table:

- **Active:**
 - Granular soil backfill 35 psf/ft
 - Undisturbed subsoil30 psf/ft
- **Passive:**
 - Shallow foundation walls250 psf/ft
 - Shallow column footings.....350 psf/ft
- **Coefficient of base friction:**0.40
The coefficient of base friction should be reduced to 0.30 when used in conjunction with passive pressure.

Where the design includes restrained elements, the following equivalent fluid pressures are recommended:

- **At rest:**
 - Granular soil backfill50 psf/ft
 - Undisturbed subsoil.....60 psf/ft

Fill against grade beams and retaining walls should be compacted to densities specified in **Earthwork**. Medium to high plasticity clay soils should not be used as backfill against retaining walls. Compaction of each lift adjacent to walls should be accomplished with hand-operated tampers or other lightweight compactors. Over compaction may cause excessive lateral earth pressures that could result in wall movement.

Floor Slab Design and Construction:

The floor slabs should be placed on a minimum of one (1.0) foot of compacted soil (including the base course). On-site or imported soils with low expansive potentials should be used in fills that will support the floor slabs. Some differential movement of a slab-on-grade floor system is possible if the subgrade soils become elevated in moisture content. Such movements are considered within general tolerance for normal slab-on-grade construction. To reduce potential slab movements, the subgrade soils should be prepared as outlined in the **Earthwork** section of the original report.

For structural design of concrete slabs-on-grade, a modulus of subgrade reaction of 250 pounds per cubic inch (pci) may be used for floors supported on compacted engineered fill.

Additional floor slab design and construction recommendations are as follows:

- Control joints should be provided in slabs to control the location and extent of cracking. Joint spacing should be designed by the structural engineer.
- Interior trench backfill placed beneath slabs should be compacted in accordance with recommended specifications outlined below.
- In areas subjected to normal loading, a minimum 4-inch layer of clean-graded gravel, aggregate base course should be placed beneath interior slabs. For heavy loading, re-evaluation of slab and/or base course thickness may be required.
- Other design and construction considerations, as outlined in the ACI Design Manual, Section 302.1R are recommended.
- If moisture sensitive floor coverings are used on interior slabs, consideration should be given to the use of membranes to help reduce the potential for vapor rise through the slab.

Subgrade preparation and moisture control recommendations provided in this report help to reduce soil related problems that may result in distress of concrete floor slabs on grade. However, concrete drying shrinkage, temperature induced volume change and curling can create cracking and distress in the concrete slab on grade. To reduce distress from these causes, properly proportioned concrete mixes with adequate curing and proper joint spacing must be provided. These options should be discussed with the project Architect/Engineer.

Corrosion and Cement Type:

A representative sample of soil from the boring was tested to evaluate the potential for the on-site soils to corrode buried metal and/or concrete. The sample was tested for pH, electrical resistivity, and soluble sulfates and chlorides. Results of these tests are summarized in the following table.

Corrosivity Test Results						
Sample No.	Boring No.	Sample Depth (ft)	pH	Resistivity (ohm-cm)	Sulfates (%)	Chlorides (%)
10102	B-9	5	8.36	1,100	0.036	ND ¹

¹ND = Not Detected

Corrosion of Concrete:

The soluble sulfate contents of the sample tested from boring B-9 was less than 0.10 percent (by weight), which may be characterized as mild potential for corrosion (IBC Table 1904.3).

According to the American Concrete Institute Building Code 318, when the sulfate content is mild exposure, ACI 318 does not have restrictions on the cement type or content of the concrete to be used. All concrete should be designed, mixed, placed, finished, and cured in accordance with the guidelines presented by the American Concrete Institute (ACI).

Corrosion of Metals:

Corrosion of buried ferrous metals can occur when electrical current flows from the metal into the soil. As the resistivity of the soil decreases, the flow of electrical current increases, increasing the potential for corrosion. A commonly accepted correlation between soil resistivity and corrosion of ferrous metals is shown in the following table.

Resistivity (ohm-cm)	Corrosivity
0 to 1,000	Severely Corrosive
1,000 to 2,000	Corrosive
2,000 to 10,000	Moderately Corrosive
>10,000	Mildly Corrosive

The sample tested had a resistivity value of 1,100 ohm-cm. Based on these laboratory results and the table above, the on-site soils would be characterized as corrosive toward ferrous metals. The potential for corrosion should be taken into account during the design process.

We have appreciated being of service to you in the geotechnical engineering phase of this project. If you have any questions concerning this addendum, please contact us.

Sincerely yours,
GEOMAT Inc.



Seth Yokel
Staff Geologist

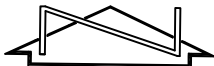



Matthew J. Cramer, P.E.
President, Principal

Attachments: Updated Site Plan; Boring Logs (B-7, B-8, and B-9); Laboratory Test Results.

Copies to: Addressee (1); Chris Van Dyck, AIA, LEED AP (1) (both via E-mail)



 Approximate Not to Scale	SITE PLAN	PROJECT	
	Boring Locations (approximate)	Central Consolidated School District (CCSD) Mesa Heights Subdivision Shiprock, New Mexico	
	GEOMAT Project No. 202-3567 Date of Exploration: September 1, 2020		



915 Malta Avenue
Farmington, NM 87401
Tel (505) 327-7928
Fax (505) 326-5721

Boring B-7

Page 1 of 1

Project Name: <u>Mesa Heights Subdivision</u>	Date Drilled: <u>9/1/2020</u>
Project Number: <u>202-3567</u>	Latitude: <u>Not Determined</u>
Client: <u>CCSD</u>	Longitude: <u>Not Determined</u>
Site Location: <u>Shiprock, New Mexico</u>	Elevation: <u>Not Determined</u>
Rig Type: <u>CME-55</u>	Boring Location: <u>See Site Plan</u>
Drilling Method: <u>7.25" O.D. Hollow Stem Auger</u>	Groundwater Depth: <u>None Encountered</u>
Sampling Method: <u>Bulk, Ring and Split spoon samples</u>	Logged By: <u>SY</u>
Hammer Weight: <u>140 lbs</u>	Remarks: <u>None</u>
Hammer Fall: <u>30 inches</u>	

Laboratory Results					Blows per 6"	Sample Type & Length (in)	Symbol	Material Type	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)								
92.3			3.1		5-6	R GRAB				1	Silty SAND with trace gravel, light tan/gray, fine- to coarse-grained, very loose to loose, slightly damp
										2	grinding on gravel/cobble layer
										3	no sample recovery
										4	
					4-6	R				5	
										6	
								SM		7	
										8	
										9	
99.6			1.5		5-7	R				10	
										11	
										12	
										13	
										14	
					4-3-7	SS				15	
										16	clay lens
										17	Total Depth 16½ feet
										18	

A = Auger Cuttings R = Ring-Lined Barrel Sampler SS = Split Spoon GRAB = Manual Grab Sample D = Disturbed Bulk Sample PP = Pocket Penetrometer



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Boring B-8

Page 1 of 1

Project Name: <u>Mesa Heights Subdivision</u>	Date Drilled: <u>9/1/2020</u>
Project Number: <u>202-3567</u>	Latitude: <u>Not Determined</u>
Client: <u>CCSD</u>	Longitude: <u>Not Determined</u>
Site Location: <u>Shiprock, New Mexico</u>	Elevation: <u>Not Determined</u>
Rig Type: <u>CME-55</u>	Boring Location: <u>See Site Plan</u>
Drilling Method: <u>7.25" O.D. Hollow Stem Auger</u>	Groundwater Depth: <u>None Encountered</u>
Sampling Method: <u>Ring and Split spoon samples</u>	Logged By: <u>SY</u>
Hammer Weight: <u>140 lbs</u>	Remarks: <u>None</u>
Hammer Fall: <u>30 inches</u>	

Laboratory Results					Blows per 6"	Sample Type & Length (in)	Symbol	Material Type	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)								
101.8			1.4	5-8	R					1	Silty SAND with trace gravel, tan/brown, fine- to coarse-grained, very loose to medium dense, slightly damp
										2	
										3	
										4	
98.9			1.8	4-6	R					5	light tan/gray
										6	
										7	
										8	
								SM		9	
										10	
				6-6-7	SS					11	
										12	
										13	poor sample recovery (in bag), contains gravel/cobble
										14	
				20-17	R					15	
										16	
										17	Total Depth 16 feet
										18	

A = Auger Cuttings R = Ring-Lined Barrel Sampler SS = Split Spoon GRAB = Manual Grab Sample D = Disturbed Bulk Sample PP = Pocket Penetrometer



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Boring B-9


Page 1 of 1

Project Name: Mesa Heights Subdivision
Project Number: 202-3567
Client: CCSD
Site Location: Shiprock, New Mexico
Rig Type: CME-55
Drilling Method: 7.25" O.D. Hollow Stem Auger
Sampling Method: Bulk, Ring and Split spoon samples
Hammer Weight: 140 lbs
Hammer Fall: 30 inches

Date Drilled: 9/1/2020
Latitude: Not Determined
Longitude: Not Determined
Elevation: Not Determined
Boring Location: See Site Plan
Groundwater Depth: None Encountered
Logged By: SY
Remarks: None

Laboratory Results					Blows per 6"	Sample Type & Length (in)	Symbol	Material Type	Soil Symbol	Depth (ft)	Soil Description
Dry Density (pcf)	% Passing #200 Sieve	Plasticity Index	Moisture Content (%)								
98.7			1.8	5-8	R			SM		1	Silty SAND with trace gravel, light tan/gray, fine- to coarse-grained, very loose to loose, slightly damp
										2	
										3	
					A					4	
				3-5-4	SS					5	
										6	
										7	
										8	
										9	
										10	
										11	
										12	
										13	
										14	
										15	
										16	
93.8			2.7	4-5	R						Total Depth 16 feet
										17	
										18	
98.2			2.2	6-10	R						

A = Auger Cuttings R = Ring-Lined Barrel Sampler SS = Split Spoon GRAB = Manual Grab Sample D = Disturbed Bulk Sample PP = Pocket Penetrometer

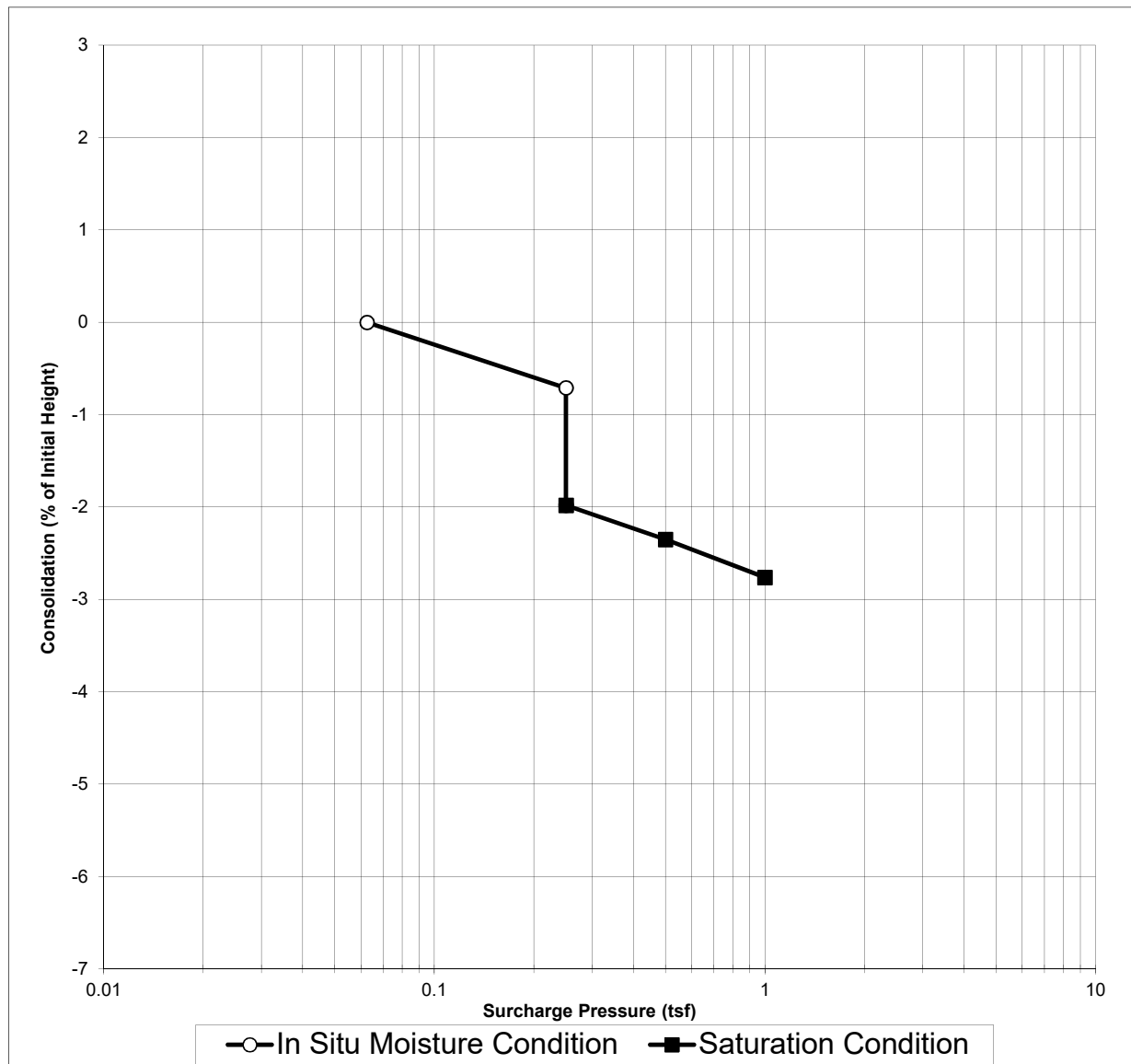
LAB NO.	BORING NO.	DEPTH FT.	ASTM D698		MOISTURE CONT. (%)	DENSITY		ATTERBERG LIMITS			SWELL (%)	CONSOL TEST	% PASS #200 SIEVE	CLASSIFICATION
			Density	Moisture		WET (pcf)	DRY (pcf)	LL	PL	PI				
10096	B-7	5	-	-	3.1	95.2	92.3	-	-	-	-	Attached	-	Silty SAND with trace gravel (SM)
10097	B-7	10	-	-	1.5	101.0	99.6	-	-	-	-	-	-	Silty SAND with trace gravel (SM)
10098	B-8	2½	-	-	1.4	103.2	101.8	-	-	-	-	Attached	-	Silty SAND with trace gravel (SM)
10099	B-8	5	-	-	1.8	100.7	98.9	-	-	-	-	Attached	-	Silty SAND with trace gravel (SM)
10101	B-9	2½	-	-	1.8	100.4	98.7	-	-	-	-	-	-	Silty SAND with trace gravel (SM)
10102	B-9	5	-	-	-	-	-	-	-	-	-	-	-	Silty SAND with trace gravel (SM)
10103	B-9	10	-	-	2.7	96.3	93.8	-	-	-	-	Attached	-	Silty SAND with trace gravel (SM)
10104	B-9	15	-	-	2.2	100.3	98.2	-	-	-	-	-	-	Silty SAND with trace gravel (SM)
						SUMMARY OF SOIL TESTS					Project		CCSD Mesa Heights Subdivision	
											Job No.		202-3567	
											Location		Shiprock, New Mexico	
											Date Drilled		9/1/2020	

PROJECT: Mesa Heights Subdivision
CLIENT: CCSD
MATERIAL: Silty SAND with trace gravel (SM)
SAMPLE SOURCE: B-7 @ 5'
SAMPLE PREP.: In Situ

JOB NO: 202-3567
WORK ORDER NO: NA
LAB NO: 10096
DATE SAMPLED: 9/1/2020
SAMPLED BY: SY

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D2435)

INITIAL VOLUME (cu.in)	4.60	FINAL VOLUME (cu.in)	4.48
INITIAL MOISTURE CONTENT	3.1%	FINAL MOISTURE CONTENT	22.8%
INITIAL DRY DENSITY(pcf)	92.3	FINAL DRY DENSITY(pcf)	94.5
INITIAL DEGREE OF SATURATION	8%	FINAL DEGREE OF SATURATION	63%
INITIAL VOID RATIO	0.80	FINAL VOID RATIO	0.75
ESTIMATED SPECIFIC GRAVITY	2.651	SATURATED AT	0.25 tsf

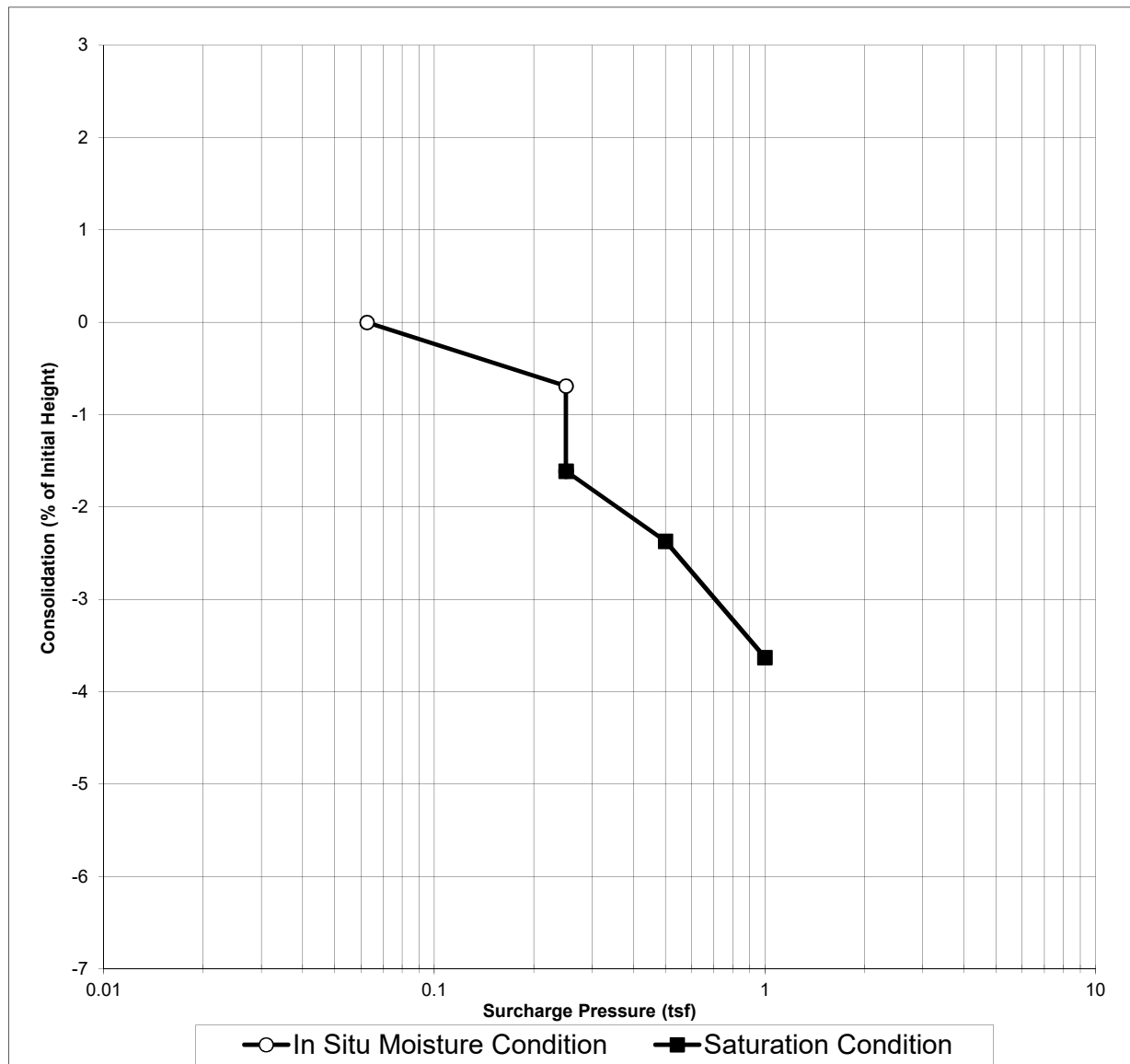


PROJECT: Mesa Heights Subdivision
CLIENT: CCSD
MATERIAL: Silty SAND with trace gravel (SM)
SAMPLE SOURCE: B-8 @ 2.5'
SAMPLE PREP.: In Situ

JOB NO: 202-3567
WORK ORDER NO: NA
LAB NO: 10098
DATE SAMPLED: 9/1/2020
SAMPLED BY: SY

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D2435)

INITIAL VOLUME (cu.in)	4.60	FINAL VOLUME (cu.in)	4.44
INITIAL MOISTURE CONTENT	1.4%	FINAL MOISTURE CONTENT	21.1%
INITIAL DRY DENSITY(pcf)	101.8	FINAL DRY DENSITY(pcf)	105.1
INITIAL DEGREE OF SATURATION	5%	FINAL DEGREE OF SATURATION	72%
INITIAL VOID RATIO	0.63	FINAL VOID RATIO	0.57
ESTIMATED SPECIFIC GRAVITY	2.651	SATURATED AT	0.25 tsf

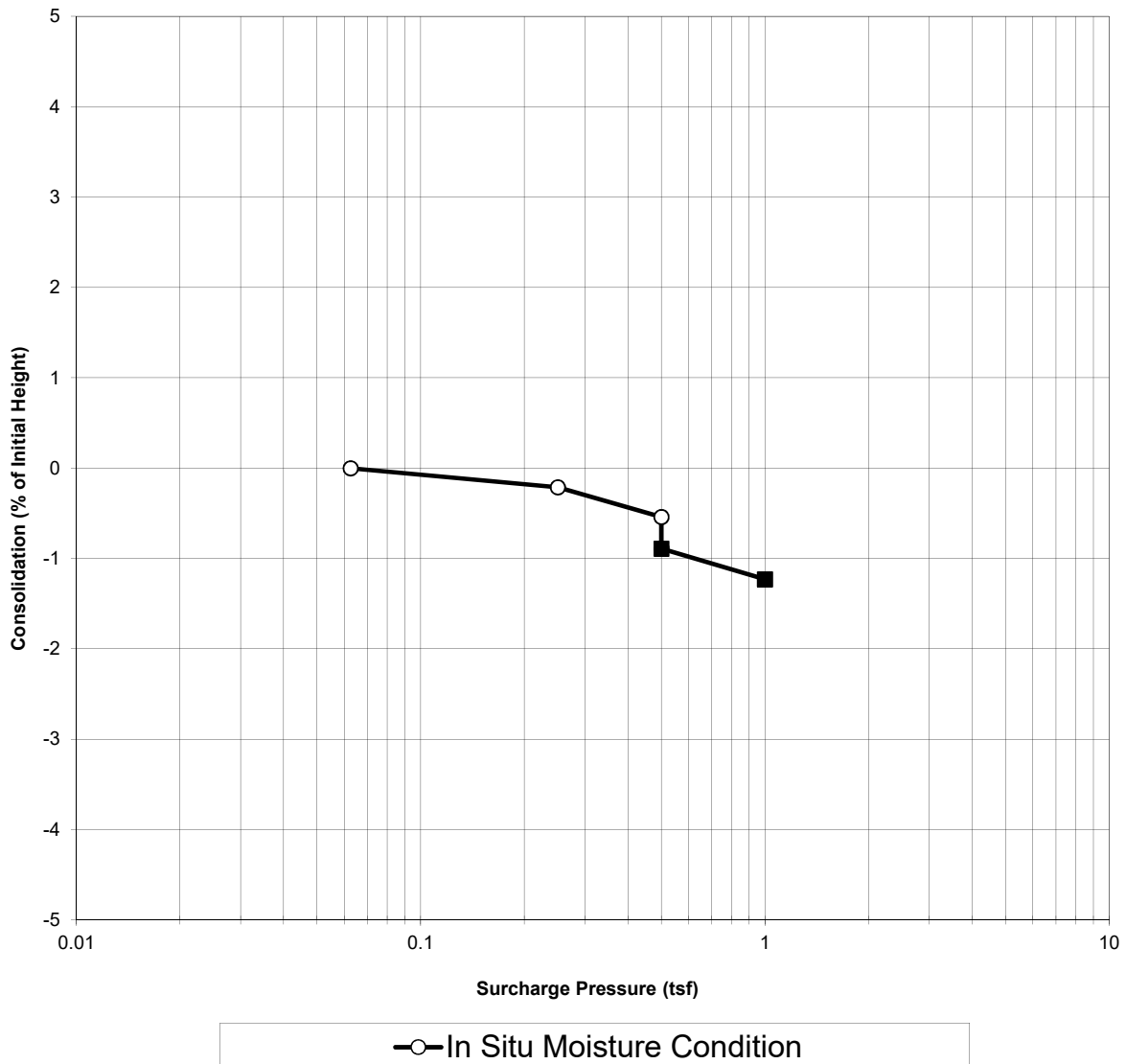


PROJECT: Mesa Heights Subdivision
CLIENT: CCSD
MATERIAL: Silty SAND with trace gravel (SM)
SAMPLE SOURCE: B-8 @ 5'
SAMPLE PREP.: In Situ

JOB NO: 202-3567
WORK ORDER NO: NA
LAB NO: 10099
DATE SAMPLED: 9/1/2020
SAMPLED BY: SY

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D2435)

INITIAL VOLUME (cu.in)	4.60	FINAL VOLUME (cu.in)	4.55
INITIAL MOISTURE CONTENT	1.8%	FINAL MOISTURE CONTENT	23.5%
INITIAL DRY DENSITY(pcf)	98.9	FINAL DRY DENSITY(pcf)	99.7
INITIAL DEGREE OF SATURATION	5%	FINAL DEGREE OF SATURATION	72%
INITIAL VOID RATIO	0.68	FINAL VOID RATIO	0.66
ESTIMATED SPECIFIC GRAVITY	2.651	SATURATED AT	0.5 tsf

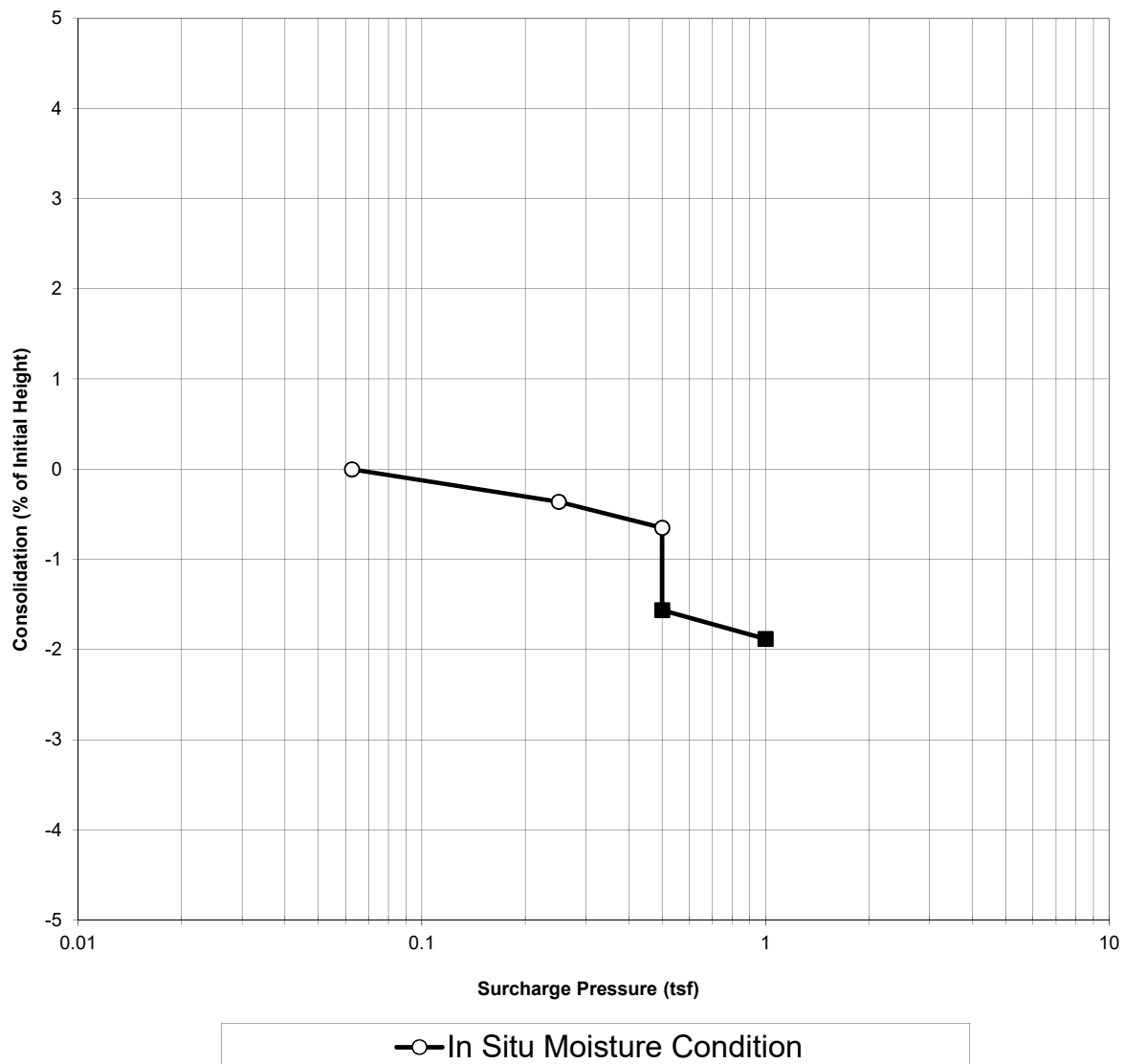


PROJECT: Mesa Heights Subdivision
CLIENT: CCSD
MATERIAL: Silty SAND with trace gravel (SM)
SAMPLE SOURCE: B-9 @ 10'
SAMPLE PREP.: In Situ

JOB NO: 202-3567
WORK ORDER NO: NA
LAB NO: 10103
DATE SAMPLED: 9/1/2020
SAMPLED BY: SY

ONE-DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS (ASTM D2435)

INITIAL VOLUME (cu.in)	4.60	FINAL VOLUME (cu.in)	4.52
INITIAL MOISTURE CONTENT	2.7%	FINAL MOISTURE CONTENT	24.1%
INITIAL DRY DENSITY(pcf)	93.8	FINAL DRY DENSITY(pcf)	95.1
INITIAL DEGREE OF SATURATION	7%	FINAL DEGREE OF SATURATION	67%
INITIAL VOID RATIO	0.77	FINAL VOID RATIO	0.74
ESTIMATED SPECIFIC GRAVITY	2.651	SATURATED AT	0.5 tsf



PART 3 - EXECUTION

3.03 COORDINATION

- A. Coordinate the installation of joint materials and moisture barriers with placement of forms and reinforcing steel. Set screeds accurately. Embedded items shall be accurately aligned and adequately supported. Verify installation of mechanical, plumbing, and electrical items to be embedded in concrete. Correct any unsatisfactory condition before proceeding further.

3.04 PREPARATION

- A. Form Coating: Coat contact surfaces of forms with a form coating compound before reinforcement is placed. Thin form-coating compounds with thinning agent and apply as specified in manufacturer's instructions. Do not allow excess form-coating material to accumulate in forms or to come into contact with concrete surfaces against which fresh concrete will be placed.

3.05 INSTALLATION

- A. Formwork: Formwork shall support vertical and lateral loads that are applied until such loads can be supported by concrete structure. Formwork shall be readily removable without impact, shock or damage to cast-in-place concrete surfaces and adjacent materials. Construct forms to sizes, shapes, lines and dimensions shown. Perform surveys to obtain accurate alignment. Provide for recesses, chamfers, blocking, anchorages, inserts, and other features required in work. Select materials to obtain required finishes. Butt joints solidly and provide backup at joints to prevent leakage of cement paste.
- B. Chamfer Strips: Provide at exposed corners and edges.
- C. Form Ties: Use factory fabricated, adjustable-length, removable or snap-off metal form ties, designed to prevent form deflection and to prevent spalling concrete surfaces upon removal.
- D. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris before concrete is placed. Retighten forms and bracing after concrete placement as required to eliminate mortar leaks and maintain proper alignment.

3.06 INSTALLATION OF EMBEDDED ITEMS

- A. General: Set anchorage devices and other embedded items accurately. Use setting drawings, diagrams, templates and printed instructions provided by supplier. Secure embedded items such that they are not displaced during placement of concrete.

3.07 JOINTS

- A. Construction Joints in Foundations and Slabs on Grade: Provide keyways at least 1 ½ inches deep in construction joints in slabs on grade and foundations. Discontinue every other horizontal bar through slab on grade construction joints unless noted otherwise.
- B. Control Joints in Slabs-on-Grade:
 - 1. Saw Cut: Contractor may saw cut control joints instead of using preformed strips. Saw cut joints shall be 1/8 inch wide. Saw cut depth should equal 1/4 of slab depth. Cut joints after concrete has hardened sufficiently to prevent raveling; usually 4 to 12 hours after slab has been cast and finished. Use diamond or silicone-carbide blades.

3.08 REMOVAL OF FORMWORK

- A. General: Prevent excessive deflection, distortion, and damage to concrete when forms are stripped. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces.
- B. Formwork and supports at sides of concrete shall remain in place for 24 hours after concrete placement. This period represents cumulative number of hours, not necessarily consecutive, during which the temperature of the air surrounding the concrete is above 50 degrees F. Formwork and shoring which support the weight of concrete shall not be removed until concrete has attained its specified compressive strength.
- C. Ensure safety of the structure. Do not superimpose any load on concrete until forms are removed and concrete is cured.

3.09 RE-USE OF FORMS

- A. General: Clean and repair surfaces of forms to be re-used in work. Split, frayed, delaminated, or otherwise damaged form facing material will not be acceptable for exposed surfaces. Apply new form coating compound as specified for new formwork.
- B. When forms are intended for successive concrete placement, thoroughly clean surfaces and remove fins and latence. Align and secure joints to avoid offsets. Do not use "patched" forms for exposed concrete surfaces.

END OF SECTION 03 1000

SECTION 03 20 00 CONCRETE REINFORCEMENT

PART 1 GENERAL

1.01 WORK INCLUDED

- A. This section includes fabrication and installation of deformed bar and welded wire fabric reinforcing steel.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Concrete Forming and Accessories - Section 03 10 00.
- B. Cast In Place Concrete - Section 03 30 00.

1.03 QUALITY ASSURANCE

- A. Reference Standards:
 - 1. American Concrete Institute (ACI), latest versions:
 - a. ACI 301 Specifications for Structural Concrete for Buildings
 - b. ACI 315 Details and Detailing of Concrete Reinforcement
 - c. ACI 318 Building Code Requirements for Structural Concrete
 - 2. American Society for Testing and Materials (ASTM), latest versions:
 - a. ASTM A 82/ A82M Standard Specification for Steel Wire, plain, for Concrete Reinforcement
 - b. ASTM A 185/ A185M Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete
 - c. ASTM A 615/ A 615M Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
 - 3. Concrete Reinforcing Steel Institute (CRSI). Design Handbook, latest version

1.04 SUBMITTALS

- A. Shop Drawings: Submit shop drawings for reinforcing steel. Comply with ACI 315 requirements showing layout, bar schedules, stirrup spacing, diagrams of bent bars, and arrangement of reinforcing steel. Shop Drawings shall not be made by reproduction of the Contract Drawings.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Reinforcing Bars: ASTM A 615, Grade 60. Stirrups and ties may be Grade 40.
- B. Steel Wire: ASTM A 82, 16 gage.
- C. Supports for Reinforcing Steel: Wire bar type and precast concrete block type meeting the requirements of CRSI Manual of Standard Practice.

2.02 FABRICATION

- A. Fabricate reinforcing steel in accordance with fabricating tolerances in ACI 315.
- B. Do not fabricate reinforcing steel until shop drawings are approved.

PART 3 EXECUTION

3.01 PLACING BAR SUPPORTS

- A. General: Provide bar supports meeting the requirements of CRSI Specification for Placing Bar Supports.

- B. Slabs-on-grade: Use supports with sand plates or precast concrete blocks or horizontal runners where base material will not support chair legs.

3.02 PLACING REINFORCING STEEL

- A. General: Comply with CRSI Code of Standard Practice for "Placing Reinforcing Bars".
- B. Clean reinforcing steel of loose rust and mill scale, earth, ice, and other materials, which reduce or destroy bond with concrete.
- C. Accurately position, support and secure reinforcing steel against displacement by formwork, construction, or concrete placement operations. Place reinforcing steel to obtain minimum coverages. Arrange, space and securely tie bars and bar supports to hold reinforcing steel in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

Concrete Cover:

Concrete cast against and permanently exposed to earth 3 inches

Concrete exposed to earth or weather:

Bars larger than No. 5 2 inches

Bars No. 5 or smaller. 1 ½ inches

- D. Rebar Splices: Locate at points of minimum stress or as shown on contract drawings. Unless noted otherwise, provide lap splices 30 bar diameters (18 inches minimum) in length.
- E. Corner Reinforcing: Provide corner bars of same size and spacing as horizontal reinforcing steel. Lap with horizontal reinforcing 30 bar diameters or 18 inches minimum length.
- F. Reinforcing at Construction/Control Joints: Continue reinforcing steel through construction joints unless noted otherwise. Discontinue reinforcing steel 2 inches from preformed construction joints in slabs-on-grade. Cut alternate longitudinal bars at weakened plane control joints in walls.

END OF SECTION 03 2000

SECTION 03 30 00
CAST IN PLACE CONCRETE

PART 1 GENERAL

1.01 WORK INCLUDED

- A. This section covers cast-in-place concrete including finishing, surface repair and curing.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Concrete Forming and Accessories - Section 03 10 00
B. Concrete Reinforcement - Section 03 20 00
C. Under Slab Vapor Retarder – Section 07 26 00

1.03 QUALITY ASSURANCE

- A. Reference Standards: Meet the requirements of the following codes, specifications and standards.
1. American Concrete Institute (ACI) Publications, latest versions;
 - a. ACI 301 Specifications for Structural Concrete
 - b. ACI 305.1 Specification for Hot Weather Concreting
 - c. ACI 306.1 Standard Specification for Cold Weather Concreting
 - d. ACI 318 Building Code Requirements for Structural Concrete.
 2. ASTM International (ASTM), latest versions;
 - a. ASTM C 31/ C31M Standard Practice for Making and Curing Concrete Test Specimens in the Field
 - b. ASTM C 33/ C33M Standard Specification for Concrete Aggregates
 - c. ASTM C 39/ C39M Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
 - d. ASTM C 94/ C 94M Standard Specification for Ready-Mixed Concrete
 - e. ASTM C 131 Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
 - f. ASTM C 136 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
 - g. ASTM C 143 C 143M Standard Test Method for Slump of Hydraulic Cement Concrete
 - h. ASTM C 150/ C150M Standard Specification for Portland Cement
 - i. ASTM C 171 Standard Specification for Sheet Materials for Curing Concrete
 - j. ASTM C 172/ C172M Standard Practice for Sampling Freshly Mixed Concrete
 - k. ASTM C 173/ C 173M Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
 - l. ASTM C 231/ Standard Test Method for Air Content of

- | | | |
|----|-----------------------|---|
| | C231M | Freshly Mixed Concrete by the Pressure Method |
| m. | ASTM C 260/
C260M | Standard Specification for Air Entraining
Admixtures for Concrete |
| n. | ASTM C 309 | Standard Specification for Liquid Membrane-Forming Compounds for
Curing Concrete |
| o. | ASTM C 330/
330M | Standard Specification for Lightweight
Aggregates for Structural Concrete |
| p. | ASTM C 494/
C 494M | Standard Specification for Chemical
Admixtures for Concrete |
| q. | ASTM C 567 | Standard Test Method for Determining Density of Structural
Lightweight Concrete |
| r. | ASTM C 618 | Standard Specification for Coal Fly Ash and Raw or Calcined Natural
Pozzolan for Use in Concrete |
| s. | ASTM D 4318 | Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity
Index of Soils |

B. Environmental Requirements: Manufacturer and Contractor shall conform to Federal, State, and Local V.O.C. (Volatile Organic Compound) Regulations in area where Project is located. Notify A/E in writing if variations to Specifications herein are required.

1. V.O.C. content shall be a maximum 250 (55) gm/liter, unless more stringent codes or laws apply.

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's product data with application and installation instructions for proprietary materials and admixtures.

B. Concrete Mix Design:

1. Submit mix design in accordance with ACI-301, Section 4.
2. Submit with mix design results of laboratory tests performed within previous 12 months indicating aggregates from the proposed source comply with the requirements of ASTM C 33 or C 330 as applicable.
3. Submit the proposed area of use for each mix design submitted (footings, stemwalls, slabs, walls, columns, etc.).

C. Granular Base Course: Submit gradation, plasticity index, and wear information.

D. Test Reports: Submit copies of test reports for concrete compressive strength, air content, temperature and slump. Submit copies of granular base course test reports.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

B. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Environmental Requirements: Manufacturer and Contractor shall conform to Federal, State, and Local V.O.C. (Volatile Organic Compound) Regulations in area where Project is located. Notify A/E in writing if variations to Specifications herein are required.

1. V.O.C. content shall be a maximum 250 (55) gm/liter, unless more stringent codes or laws apply.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Portland Cement: ASTM C 150, Type II, low alkali. Use one brand of cement throughout project.
- B. Normal Weight Aggregates: ASTM C 33. Provide aggregates from a single source for exposed concrete.
- C. Water: ASTM C1602.
- D. Air-Entraining Admixture: ASTM C 260.
- E. Water Reducing Admixture: ASTM C 494.
- F. Fly-Ash: ASTM C 618, Class F.
- G. Moisture-Retaining Cover: Provide waterproof paper, polyethylene film, or polyethylene-coated burlap meeting the requirements of ASTM C 171.
- H. Liquid Membrane-Forming Curing Compound: Liquid type membrane-forming curing compound meeting the requirements of ASTM C 309; Type 1-D with fugitive dye for interior concrete and foundations; Type 2, white pigmented, for exposed exterior concrete except exposed exterior Architectural concrete, use Type 1-D.
- I. Curing compound shall NOT be used on interior slabs, except exposed integrally colored concrete slabs. Curing compound to be used on integrally colored concrete slabs shall be approved by the manufacturer of the color.
- J. Vapor Retarder shall comply with Section 07 26 00 of these Specifications.
- K. Granular base shall meet the following grading requirements when tested in accordance with ASTM C 136.
- L. Granular base shall meet the gradation and material properties requirements as listed in the General Structural Notes.
- M. The plasticity Index shall be no greater than 3 when tested in accordance with ASTM D 4318. The coarse aggregate shall have a percent wear of 50 or less when tested in accordance with ASTM C 131.

2.02 PROPORTIONING AND DESIGN OF MIXES

- A. Prepare design mixes for each type and strength of concrete by either laboratory trial mixture or field experience methods as specified in ACI 301, Section 4. If trial mixture method is used, employ an independent testing facility, acceptable to Architect, for preparing and reporting proposed mix designs.
- B. Submit written reports to Architect, or Engineer, of each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been approved.
- C. Refer to the General Structural Notes for concrete strengths.
- D. Slabs-on-ground or on vapor retarder shall have a water/total cementitious ratio not to exceed 0.45.
- E. Admixtures
 - 1. Use water reducing admixture conforming to ASTM C 494, Type A, in all concrete unless approved otherwise by the Structural Engineer.
 - 2. All other admixtures shall have the written approval of the Architect or Structural Engineer.
 - 3. Calcium chloride is not permitted.
 - 4. All admixtures, except high range water reducers, shall be added to the concrete at the batch plant.

PART 3 EXECUTION

3.01 COORDINATION

- A. Coordinate the installation of joint materials and moisture barriers with placement of forms and reinforcing steel. Set screeds accurately. Embedded items shall be accurately aligned and adequately

supported. Verify installation of mechanical, plumbing, and electrical items to be embedded in concrete. Correct any unsatisfactory condition before proceeding further.

3.02 PREPARATION

- A. Before placing concrete, clean and roughen surface of previously placed concrete. Clean reinforcing steel. Remove debris, providing clean-outs at bottom of forms when necessary. Moisten surfaces to receive concrete unless otherwise prepared. Remove excess water before placing concrete.
- B. The subgrade for floor slab support shall be graded uniformly flat using a laser device immediately prior to concrete placement.

3.03 CONCRETE PLACEMENT

- A. General: Comply with ACI 301.
- B. Place concrete continuously in layers not deeper than 24 inches. Concrete shall not be placed against concrete which has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be placed continuously, provide construction joints. Deposit concrete as nearly as practicable to its final location to avoid segregation. Do not use vibrators to transport concrete.
- C. Maintain reinforcing in proper position during concrete placement operations.
- D. Consolidate concrete, immediately after placing, by mechanical vibrating equipment supplemented by hand-spading, rodding or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI recommended practices.
- E. Bring slab surfaces to correct level with straightedge and strikeoff. Use bull floats or darbies to smooth surface. Do not disturb slab surfaces prior to beginning finishing operations.
- F. Cold Weather Concreting: Protect concrete work from physical damage or reduced strength caused by frost, freezing or low temperatures. Comply with ACI 306.1.
- G. Hot Weather Concreting: When hot weather conditions exist that would impair quality and strength of concrete, reduce delivery time of ready mix concrete, lower the temperature of materials, or add retarder to ensure that the concrete is plastic. Retempering with water is not allowed. Comply with ACI 305.1.

3.04 FINISH OF FORMED SURFACES

- A. Rough Form Finish: Provide where formed concrete surfaces are not exposed to view. Tie holes and surface imperfections shall be repaired and patched and fins and other projections exceeding 1/4 inch in height rubbed down or chipped off.

3.05 FINISH OF HORIZONTAL SURFACES

- A. At tops of foundation walls and grade beams finish with a texture matching adjacent formed surfaces unless otherwise indicated.

3.06 SLAB FINISHES

- A. Float Finish: Begin floating when surface water has disappeared and when concrete has stiffened sufficiently to permit operation of power-driven or hand floats. Consolidate surface with power-driven floats, or by hand-floating if area is small or inaccessible to power units. Check and level surface plane to a tolerance not exceeding 1/4 inch in 10 feet when tested with a 10 foot straightedge.
- B. Scratch Finish: Apply scratch finish to slab surfaces that are to receive floor topping. Roughen surface before final set, using stiff brushes, or brooms.
- C. Trowel Finish: Apply trowel finish to all slab surfaces unless noted otherwise. After floating, begin first trowel finish using a power-driven or hand trowel. Finish concrete surface by a final hand-trowel operation, free of trowel marks, and uniform in texture and appearance. The final surface finish for slabs-on-grade shall have a minimum FF = 25 and a minimum FL = 20 per ACI requirements.
- D. Broom Finish: Apply on exterior slabs, ramps, steps, and sidewalks. Immediately after concrete has received a float finish, draw a broom or burlap belt across the surface to give a coarse transverse scored texture.

3.07 CONCRETE CURING AND PROTECTION

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Continue curing for at least 7 days.
- B. Moisture-retaining Cover curing: All interior concrete slabs, except exposed integrally colored concrete slabs, are to be cured with a moisture retaining cover for the first 7 days. After that time, the cover shall be removed and the slab should be allowed to dry. Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3 inches and sealed. Repair any holes or tears in cover during curing period.
- C. Curing compound: At contractor's option, exterior concrete slabs may be cured using curing compound. All vertical concrete (walls, beams, etc...) shall be cured using curing compound – apply compound to the vertical surface as soon as the forms are removed. Apply curing compound uniformly in accordance with the manufacturer's printed instructions. Curing compound shall NOT be used on interior slabs, except exposed integrally colored concrete slabs.
- D. Exposed integrally colored concrete slabs: Use curing compound recommended by the concrete supplier. Apply with and airless sprayer.

3.08 CONCRETE SURFACE REPAIRS

- A. Patching Surface Imperfections: Remove loose material and patch surface imperfections and holes left by tie rods with cement mortar. Surface imperfections include honeycomb, excessive air voids, sand streaking and cracks.

3.09 FOR EXPOSED-TO-VIEW SURFACES

- A. Blend white portland cement and standard portland cement so that, when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

3.10 FIELD QUALITY CONTROL

- A. The Owner shall employ the services of a qualified testing laboratory to perform tests and submit test reports.
- B. Sampling Fresh Concrete: ASTM C 172.
- C. Slump: ASTM C 143; one test for each set of compressive strength test specimens.
- D. Air Content: ASTM C 173 or C 231 for each set of compressive strength test specimens.
- E. Concrete Temperature: ASTM C138; Test hourly when air temperature is 40 degrees F. and below, when 80 degrees F and above; and when compression test specimens are made.
- F. Compression Test Specimen: ASTM C 31, one set of 4 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field cure test specimens are required. Mold one set of standard cylinders for volume of concrete specified below or fraction thereof.
 - 1. Slabs on Grade 30 cubic yards
 - 2. Footings and stem walls 50 cubic yards
 - 3. All other locations (unless noted otherwise) 30 cubic yards
- G. Compressive Strength Tests: ASTM C 39; test 1 specimen at 7 days, 2 specimens at 28 days, and retain one specimen in reserve for later testing. Additional Tests: The testing laboratory will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure as directed by the Architect. The testing laboratory may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed by the Architect or Engineer. The Owner shall pay for such tests conducted, and any other additional testing as may be required, when unacceptable concrete is verified.

- H. Granular Base Course: ASTM C 136 and ASTM D 4318 for every 500 square yards of building slab area.

END OF SECTION 03 3000

SECTION 06 10 00
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Structural dimension lumber framing.
- B. Non-structural dimension lumber framing.
- C. Rough opening framing for doors, windows, and roof openings.
- D. Sheathing.
- E. Roofing nailers.
- F. Preservative treated wood materials.
- G. Miscellaneous framing and sheathing.
- H. Concealed wood blocking, nailers, and supports.
- I. Miscellaneous wood nailers, furring, and grounds.

1.02 RELATED REQUIREMENTS

- A. Section 033000 - Cast-in-Place Concrete: Setting anchors in concrete.
- B. Section 061733 - Wood I-Joists.
- C. Section 07 25 00 - Weather Barriers: Water-resistive barrier over sheathing.
- D. Section 07 62 00 - Sheet Metal Flashing and Trim.
- E. Section 31 31 16 - Termite Control: Field-applied termiticide and mildewcide for wood materials.

1.03 REFERENCE STANDARDS

- A. AWC (WFCM) - Wood Frame Construction Manual for One- and Two-Family Dwellings 2015.
- B. PS 1 - STRUCTURAL PLYWOOD 2009.
- C. PS 20 - AMERICAN SOFTWOOD LUMBER STANDARD 2020.
- D. WWPA G-5 - WESTERN LUMBER GRADING RULES 2017.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

1.06 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Grading Agency: Western Wood Products Association; WWPA G-5.
- B. Sizes: Nominal sizes as indicated on drawings, S4S.
- C. Moisture Content: S-dry or MC19.
- D. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. Species: Douglas Fir-Larch, unless otherwise indicated.
 - 2. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.

3. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at www.alsc.org, and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
4. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.

E. Provide sustainably harvested wood; see Section 01 60 00 - Product Requirements for requirements.

2.02 DIMENSION LUMBER

A. Structural Framing Lumber:

1. Studs, sills, plates, ledgers, stiffeners, bridging, etc. Size and spacing as indicated and as required, shall be:
 - a. Species: Spruce-Pine-Fir: Grade No. 2 or better
 - b. Fb= 875 psi
 - c. Ft= 450 psi
 - d. Fv= 70 psi
 - e. Fc= 425 psi perpendicular to grain
 - f. Fc= 725 psi parallel to grain
 - g. Ec= 1,300,000 psi
2. Wood members 2" to 4" thick, 5" and wider.
 - a. Species: Hem-Fir: Grade No. 1 or better
 - b. Fb= 1200 psi
 - c. Ft=800 psi
 - d. Fv= 75 psi
 - e. Fc= 425 psi perpendicular to grain
 - f. Fc= 1050 psi parallel to grain
 - g. Ec= 1,500,000 psi
3. Beam and Stringers.
 - a. Species: Hem-Fir: Grade No. 1 or Douglas Fir-Larch: Dense No. 2
 - b. Fb= 1050 psi
 - c. Ft= 525 psi
 - d. Fv= 70 psi
 - e. Fc= 405 psi perpendicular to grain
 - f. Fc= 750 psi parallel to grain
 - g. Ec= 1,300,000 psi

B. Non-Structural Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:

1. Lumber: S4S, No. 2 or Standard Grade.
2. Boards: Standard or No. 3.

2.03 CONSTRUCTION PANELS

A. Roof Sheathing: PS 2 type, rated Structural I Sheathing.

1. Bond Classification: Exterior.
2. Span Rating: 24/16.
3. Performance Category: 3/4 PERF CAT.

B. Roof Sheathing: Oriented strand board wood structural panel; PS 2.

1. Grade: Structural I Sheathing.
2. Bond Classification: Exposure 1.
3. Performance Category: 5/8 PERF CAT.
4. Span Rating: 24/16.
5. Edges: Square.
6. Exposure Time: Sheathing will not delaminate or require sanding due to moisture absorption from exposure to weather for up to 500 days.
7. Provide fastening guide on top panel surface with separate markings indicating fastener spacing for 16 inches (406 mm) and 24 inches (610 mm) on center, respectively.

- C. Wall Sheathing: Plywood, PS 1, Grade C-D, Exposure I.
 - 1. Edges: Square
- D. Wall Sheathing: Oriented strand board wood structural panel; PS 2.
 - 1. Grade: Structural 1 Sheathing.
 - 2. Bond Classification: Exposure 1.
 - 3. Performance Category: 5/8 PERF CAT.
 - 4. Span Rating: 40/20.
 - 5. Edges: Square.
 - 6. Exposure Time: Sheathing will not delaminate or require sanding due to moisture absorption from exposure to weather for up to 500 days.
 - 7. Provide fastening guide on top panel surface with separate markings indicating fastener spacing for 16 inches (406 mm) and 24 inches (610 mm) on center, respectively.
- E. Other Applications:
 - 1. Plywood Concealed From View But Located Within Exterior Enclosure: PS 1, C-C Plugged or better, Exterior grade.
 - 2. Plywood Exposed to View But Not Exposed to Weather: PS 1, A-D, or better.
 - 3. Other Locations: PS 1, C-D Plugged or better.
 - 4. Plywood installed on underside of roof joists in locations where a framed drop ceiling is installed: 1/4" plywood, fastened as required. Installed as a closure for the insulation cavity.

2.04 ACCESSORIES

- A. Fasteners:
 - 1. Nails: Meeting the requirements of ASTM F1667
 - a. Common wire nails. Use galvanized box nails where rough carpentry is exposed to moisture.
 - b. Non-corrosive finish nails of either stainless steel, aluminum or high quality hot-dipped galvanized shall be used on all exposed decorative lumber and redwood flooring.
 - 2. Bolts: ASTM A307-94 "Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength," galvanized for exterior connections. Use washers under all heads where in contact with wood; use washers under all nuts. Bolts shall meet the requirements of ANSI/ASME Standard B18.2.1.
 - 3. Screws: In accordance with ANSI/ASME Standard B18.6.1.
 - 4. Connectors, Anchors, Etc.: Type and size to meet job conditions and as indicated on the Drawings, or as required, as manufactured by Simpson Co., San Leandro, California 94577 or acceptable substitution.
- B. Joist Hangers: Hot dipped galvanized steel, sized to suit framing conditions.
 - 1. For contact with preservative treated wood in exposed locations, provide minimum G185 (Z550) galvanizing complying with ASTM A653/A653M.
 - 2. Manufacturers:
 - a. Simpson Strong-Tie.
 - b. McMaster.
 - c. Substitutions: See Section 016000 - Product Requirements.
- C. Sill Gasket on Top of Foundation Wall: 1/4 inch (6 mm) thick, plate width, closed cell plastic foam from continuous rolls.

2.05 FACTORY WOOD TREATMENT

- A. Treated Lumber and Plywood: Comply with requirements of AWWA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
- B. 1.Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWWA standards.
- C. PRESERVATIVE TREATMENT:
 - 1. Manufacturers:
 - a. Lonza Group; www.wolmanizedwood.com/#sle.
 - b. Koppers Performance Chemicals, Inc; www.koppersperformancechemicals.com/#sle.
 - c. Viance, LLC; Preserve ACQ: www.treatedwood.com/#sle.

- d. Substitutions: See Section 016000 - Product Requirements.

PART 3 EXECUTION

3.01 PREPARATION

- A. Where wood framing bears on cementitious foundations, install full width sill flashing continuous over top of foundation, lap ends of flashing minimum of 4 inches (100 mm) and seal.
- B. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.
- C. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.
- B. Discard units of material with defects that impair quality of carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.
- C. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- D. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.
- E. Fit carpentry to other construction; scribe and cope as required for accurate fit.
- F. Countersink nail heads on exposed carpentry work and fill holes with wood filler.
- G. Predrill members for fasteners when necessary to avoid splitting wood.
- H. Countersink bolt heads, nuts and washers where required. Countersink only depth needed to bring bolt head or nut flush with face of lumber maintaining as much of the secured member wood under anchorage as possible.

3.03 FRAMING INSTALLATION

- A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.
- B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.
- C. Install structural members full length without splices unless otherwise specifically detailed.
- D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AWC (WFCM) Wood Frame Construction Manual.
- E. Install horizontal spanning members with crown edge up and not less than 1-1/2 inches (38 mm) of bearing at each end.
- F. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.
- G. Provide bridging at joists in excess of 8 feet (2.3 m) span as detailed. Fit solid blocking at ends of members.
- H. Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

3.04 PRESERVATIVE-TREATED WOOD - GENERAL

- A. Where wood-preservative-treated lumber is installed adjacent to metal decking, metal flashings or other metal products, install continuous flexible flashing separator, such as a peel-and-stick polymeric membrane, between treated wood and metal.

3.05 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
 - 1. Blocking is not required to be treated, unless in contact with concrete slab on grade.

- B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.
- C. In wood framed assemblies with attics provide wood fireblocking of gypsum board, wood sheathing or dimensional lumber for draftstopping as required by applicable local code or as indicated.
- D. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
- E. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.
- F. Provide the following specific non-structural framing and blocking:
 - 1. Cabinets and shelf supports.
 - 2. Wall brackets.
 - 3. Handrails.
 - 4. Grab bars.
 - 5. Towel and bath accessories.
 - 6. Wall-mounted door stops.
 - 7. Chalkboards and marker boards.
 - 8. Wall paneling and trim.
 - 9. Joints of rigid wall coverings that occur between studs.
 - 10. Other locations as required by manufacturer recommendations.

3.06 ROOF-RELATED CARPENTRY

- A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.
- B. Secure blocking to wood decking by bolting into supporting structure or through decking into supplemental blocking.

3.07 INSTALLATION OF CONSTRUCTION PANELS

- A. Roof Sheathing: Secure panels with long dimension perpendicular to framing members, with ends staggered and over firm bearing.
 - 1. At long edges use sheathing clips where joints occur between roof framing members.
 - a. At long edges provide solid edge blocking where joints occur between roof framing members.
 - 1) Nail panels to framing; staples are not permitted.
- B. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails, screws, or staples.
 - 1. Use plywood or other acceptable structural panels at building corners, for not less than 96 inches (2440 mm), measured horizontally.
 - 2. Provide inlet diagonal bracing at corners.
 - 3. Place water-resistive barrier horizontally over wall sheathing, weather lapping edges and ends.

3.08 TOLERANCES

- A. Framing Members: 1/4 inch (6 mm) from true position, maximum.
- B. Surface Flatness of Floor: 1/8 inch in 10 feet (1 mm/m) maximum, and 1/4 inch in 30 feet (7 mm in 10 m) maximum.
- C. Variation from Plane, Other than Floors: 1/4 inch in 10 feet (2 mm/m) maximum, and 1/4 inch in 30 feet (7 mm in 10 m) maximum.

3.09 CLEANING

- A. Waste Disposal: Comply with the requirements of Section 01 74 19 - Construction Waste Management and Disposal.
 - 1. Comply with applicable regulations.
 - 2. Do not burn scrap on project site.

3. Do not burn scraps that have been pressure treated.
 4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or "waste-to-energy" facilities.
- B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.
- C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

SECTION 06 20 00
FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Finish carpentry items.
- B. Wood door frames, glazed frames.
- C. Wood casings and moldings.
- D. Exposed exterior trim.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Support framing, grounds, and concealed blocking.
- B. Section 06 41 00 - Architectural Wood Casework: Shop fabricated custom cabinet work.
- C. Section 08 14 16 - FLUSH WOOD DOORS.
- D. Section 09 91 13 - Exterior Painting: Painting of finish carpentry items.
- E. Section 09 91 23 - Interior Painting: Painting of finish carpentry items.
- F. Section 12 35 30 - Residential Casework: Shop fabricated cabinet work.

1.03 REFERENCE STANDARDS

- A. ANSI A135.4 - American National Standard for Basic Hardboard; 2004.
- B. ANSI A208.1 - American National Standard for Particleboard; 2009.
- C. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.
- D. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.0; 2016.
- E. AWI/AWMAC (QSI) - Architectural Woodwork Quality Standards Illustrated; Architectural Woodwork Institute and Architectural Woodwork Manufacturers Association of Canada; 2005, 8th Ed., Version 2.0.
- F. BHMA A156.9 - American National Standard for Cabinet Hardware; 2010.
- G. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; 2009.
- H. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.
- I. NHLA G-101 - Rules for the Measurement & Inspection of Hardwood & Cypress; 2011.
- J. PS 1 - Structural Plywood; 2009.
- K. PS 20 - American Softwood Lumber Standard; 2010.
- L. WI (MAN) - Manual of Millwork; Woodwork Institute; 2003.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with plumbing rough-in, electrical rough-in, and installation of associated and adjacent components.
- B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data:
 - 1. Provide manufacturer's product data, storage and handling instructions for factory-fabricated units.
 - 2. Provide instructions for attachment hardware and finish hardware.
- C. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
 - 1. Scale of Drawings: 1-1/2 inch to 1 foot (125 mm to 1 m), minimum.
 - 2. Provide the information required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
- D. Samples: Submit two samples of wood trim 4 inch (100 mm) long.

1.06 QUALITY ASSURANCE

- A. Grade materials in accordance with the following:
 - 1. Softwood Lumber: In accordance with rules certified by ALSC; www.alsc.org.
 - 2. Plywood: Certified by the American Plywood Association.
 - 3. Hardwood Lumber: In accordance with NHLA Grading Rules; www.natlhardwood.org.
- B. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver factory-fabricated units to project site in original packages, containers or bundles bearing brand name and identification.
- B. Store finish carpentry items under cover, elevated above grade, and in a dry, well-ventilated area not exposed to heat or sunlight.
- C. Protect from moisture damage.
- D. Handle materials and products to prevent damage to edges, ends, or surfaces.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. Interior Woodwork Items:
 - 1. Moldings, Bases, Casings, and Miscellaneous Trim: Poplar; prepare for paint finish.
 - 2. Door Frames: Poplar; prepare for paint finish.
 - 3. Window Sills: Poplar; prepare for paint finish.
 - 4. Loose Shelving: Poplar; prepare for paint finish.

2.02 WOOD-BASED COMPONENTS

- A. Wood fabricated from old growth timber is not permitted.

2.03 LUMBER MATERIALS

- A. Hardwood Lumber: Popular species, plain sawn, maximum moisture content of 6 percent, use where indicated and where indicated for a paint finish.

2.04 SHEET MATERIALS

2.05 FASTENINGS

- A. Adhesive for Purposes Other Than Laminate Installation: Suitable for the purpose; not containing formaldehyde or other volatile organic compounds.
- B. Fasteners: Of size and type to suit application; galvanized finish in concealed locations and architect to select finish in exposed locations.
- C. Concealed Joint Fasteners: Threaded steel.
- D. Fasteners for Exterior Finish Carpentry: Hot-dip galvanized steel or stainless steel.

2.06 ACCESSORIES

- A. Adhesive: Type recommended by fabricator to suit application.
- B. Lumber for Shimming and Blocking: Softwood lumber of indicated species.
- C. Primer: Alkyd primer sealer.
- D. Wood Filler: Solvent base, tinted to match surface finish color.

2.07 HARDWARE

- A. Specialty Workstation and Countertop Brackets:
 - 1. Material: Steel.
 - 2. Finish: Manufacturer's standard, factory-applied powder coat.

3. Color: Selected by Architect from manufacturer's standard range.

2.08 FABRICATION

- A. Shop assemble work for delivery to site, permitting passage through building openings.
- B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify adequacy of 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. See Section 06 10 00 for installation of recessed wood blocking.
 1. Provide blocking for wood trim, wood base, etc.

3.02 INSTALLATION

- A. Install custom fabrications in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.
- B. Install factory-fabricated units in accordance with manufacturer's printed installation instructions.
- C. Set and secure materials and components in place, plumb and level.
- D. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch (0.79 mm). Do not use additional overlay trim to conceal larger gaps.
- E. Cope or miter inside corners and miter outside corners to produce tight-fitting and matching profile joints.
- F. Erect, shim and fasten members securely. Where loads are applied to members, assure fastening and gluing to resist loads and movement
- G. Select adjacent transparent finish members for compatibility of grain and color.
- H. Do not use warped or twisted members.
- I. Kerf back of trim members 6 inch (152 mm) and wider.
- J. Back prime members before installing. Prime shall not interfere with finish.
- K. Joints:
 1. Install in longest lengths possible to minimize joints.
 2. Diagonally cut joints (scarf joints).
 3. Stagger joints with adjacent members or multi-member elements.
 4. Dowel or spline and glue miter joints on members 4 inch (101 mm) and wider.
 5. Self-miter ends of exposed transparent finished members. Opaque finished members may be profiled to match face.
- L. Fastening:
 1. Use blind nailing whenever possible or if using concealed fastening, provide small head fasteners.
 2. Set exposed fasteners to allow for wood filler.
 3. Cover large head screw and similar fasteners with wood matching plug interior, set flush exterior

3.03 PREPARATION FOR SITE FINISHING

- A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.
- B. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

3.04 TOLERANCES

- A. Maximum Variation from True Position: 1/16 inch (1.6 mm).
- B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch (0.79 mm).

END OF SECTION

SECTION 07 14 00
FLUID-APPLIED WATERPROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fluid-Applied Waterproofing:
 - 1. Polyurethane waterproofing.

1.02 RELATED REQUIREMENTS

- A. Section 31 20 00 - Earth Moving - For backfill.
- B. Section 03 30 00 - Cast-in-Place Concrete: Concrete substrate.
- C. Section 33 46 00-Subdrainage: Foundation drainage.

1.03 REFERENCE STANDARDS

- A. ASTM C836/C836M - Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course; 2012.
- B. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2006a (Reapproved 2013).
- C. ASTM D746 - Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact; 2014.
- D. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2005 (Reapproved 2010).
- E. ASTM D4541 - Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers; 2009.
- F. ASTM D5385/D5385M - Standard Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes; 1993 (Reapproved 2014).
- G. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2014.
- H. NRCA (WM) - The NRCA Waterproofing Manual; 2005.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data for membrane and joint and crack sealants.
- C. Shop Drawings: Indicate special joint or termination conditions and conditions of interface with other materials.
- D. Certificate: Certify that products meet or exceed specified requirements.
- E. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and acceptable installation temperatures.
- F. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.06 FIELD CONDITIONS

- A. Maintain ambient temperatures above 40 degrees F (5 degrees C) for 24 hours before and during application and until cured.
- B. Do not apply waterproofing to a damp or wet substrate.
 - 1. Do not apply waterproofing in snow, rain, fog or mist, or when such weather conditions are imminent during application and curing period.
- C. Allow concrete to cure a minimum of 14 days before application and as required by manufacturer.

1.07 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Submit manufacturer's standard warranty in which waterproofing manufacturer and installer sign and agree to correct defective Work within a five year period after Date of Substantial Completion; remove and replace materials concealing waterproofing at no cost to General Contractor.
- C. Provide five year manufacturer warranty for waterproofing failing to resist penetration of water, except where such failures are the result of structural failures of building. Hairline cracking of concrete due to temperature change or shrinkage is not considered a structural failure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Polyurethane Waterproofing:
 - 1. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com
 - 2. Tremco Inc.: www.tremcosealants.com
 - 3. Anti-Hydro International, Inc.: www.anti-hydro.com
 - 4. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 WATERPROOFING APPLICATIONS

- A. Polyurethane Waterproofing:
 - 1. Location: Sides of turned down slab edge..
 - 2. Cover with protection board.

2.03 FLUID APPLIED WATERPROOFING MATERIALS

- A. Polyurethane Waterproofing: Cold-applied one or two component polyurethane, complying with ASTM C836/C836M.
 - 1. Cured Thickness: 60 mils, 0.060 inch (1.52 mm), minimum.
 - 2. Suitable for installation over concrete substrates.
 - 3. VOC Content: None.
 - 4. Tensile Strength: 400 psi (2.758 MPa), minimum, measured in accordance with ASTM D412.
 - 5. Ultimate Elongation: 180 percent, minimum, measured in accordance with ASTM D412.
 - 6. Durometer Hardness, Type A: 30, minimum, in accordance with ASTM D2240.
 - 7. Permeance: 0.073 perms (4 ng/(Pa s sq m)), measured in accordance with ASTM E96/E96M.
 - 8. Adhesion: Greater than 150 psi (1.03 MPa), measured in accordance with ASTM D4541.
 - 9. Brittleness Temperature: Based on minus 50 degrees F (minus 46 degrees C), measured in accordance with ASTM D746.

2.04 ACCESSORIES

- A. General: Provide auxiliary materials recommended by manufacturer to be compatible with one another and with waterproofing, as demonstrated by waterproofing manufacturer, based on testing and field experience.
- B. Primer: Manufacturer's standard, factory-formulated polyurethane or epoxy primer.
- C. Protection Board: 1/4 inch (6 mm) thick polystyrene foam sheet .
- D. Cant Strips: Premolded composition material.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify substrate surfaces are free of frozen matter, dampness, loose particles, cracks, pits, projections, penetrations, or foreign matter detrimental to adhesion or application of waterproofing system.
 - 1. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, acid residues, and other penetrating contaminants or film-forming coatings from concrete.
- C. Verify that substrate surfaces are smooth, free of honeycomb or pitting, and not detrimental to full contact bond of waterproofing materials.

1. Remove fins, ridges, and other projections and fill honeycomb, aggregate pockets, and other voids.
- D. Verify items that penetrate surfaces to receive waterproofing are securely installed.

3.02 PREPARATION

- A. Protect adjacent surfaces from damage not designated to receive waterproofing.
- B. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions; vacuum substrate clean.
- C. Do not apply waterproofing to surfaces unacceptable to waterproofing manufacturer.
- D. Install cant strips at inside corners.
- E. Prepare vertical and horizontal surfaces at terminations and penetrations through waterproofing and at expansion joints, drains, and sleeves according to manufacturer's written instructions.

3.03 INSTALLATION

- A. Install waterproofing to specified minimum thickness in accordance with manufacturers instructions and NRCA (WM) applicable requirements.
- B. Prime porous substrate unless otherwise instructed by waterproofing manufacturer.
- C. Prepare, treat, rout, and fill joints and cracks in substrate according to waterproofing manufacturer's written instructions. Remove dust and dirt from joints and cracks before coating surfaces.
 1. Static Joints: Joints and cracks less than 1/16 inch (1.6 mm) must be filled by prestripping to a width of 4 inch (102 mm) on each side.
 2. Working Joints: All joints over 1/16 inch (3 mm) must be sealed with a sealant approved by manufacturer.
- D. Verify wet film thickness of waterproofing every 100 sq ft (9.3 sq m).

3.04 INSTALLATION - PROTECTION BOARD

- A. Place protection board directly against drainage panel; butt joints, and scribe and cut boards around projections, penetrations, and interruptions.

3.05 FIELD QUALITY CONTROL

- A. Correct deficiencies in or remove waterproofing that does not comply with requirements, repair substrates and reapply waterproofing.

3.06 SCHEDULE

- A. Apply to exterior, below-grade surfaces of exterior concrete walls in contact with backfill and where space is enclosed on opposite side.
- B. Apply to back side of concrete retaining walls to prevent percolating of water through the wall.

END OF SECTION

SECTION 07 21 00
THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Board insulation at perimeter foundation wall.
- B. Batt insulation in exterior wall construction.
- C. Batt insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Supporting construction for batt insulation.
- B. Section 07 21 19 - Foamed-In-Place Insulation: Plastic foam insulation other than boards.
- C. Section 07 21 26 - Blown Insulation: Blown-in, gravity-held fibrous insulation.
- D. Section 07 24 00 - Exterior Insulation and Finish Systems: Board insulation on exterior side of walls, finished with weatherproof coating.
- E. Section 09 21 16 - Gypsum Board Assemblies: Acoustic insulation inside walls and partitions.

1.03 REFERENCE STANDARDS

- A. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2015a.
- B. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation; 2014.
- C. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2012.
- D. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2014.
- E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- F. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2014.
- G. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C; 2012.
- H. NFPA 255 - Standard Method of Test of Surface Burning Characteristics of Building Materials; National Fire Protection Association; 2006.
- I. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components; 2012.
- J. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Underwriters Laboratories Inc.; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on product characteristics and performance criteria.
- C. Manufacturer's Installation Instructions: Include information on installation techniques.

1.05 FIELD CONDITIONS

- A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

1.06 DELIVERY, STORAGE AND PROTECTION

- A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

PART 2 PRODUCTS

2.01 APPLICATIONS

- A. Insulation at Perimeter of Foundation: Expanded polystyrene (EPS) board.
- B. Insulation in Wood Framed Walls: Batt insulation with integral vapor retarder.

2.02 FOAM BOARD INSULATION MATERIALS

- A. Expanded Polystyrene (EPS) Board Insulation: ASTM C578, Type IX; with the following characteristics:
 - 1. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
 - 2. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
 - 3. Complies with fire resistance requirements specified as part of an exterior non-load-bearing exterior wall assembly when tested in accordance with NFPA 285.
 - 4. Board Edges: Square.
 - 5. Type and Water Absorption: Type XI, 4.0 percent by volume, maximum, by total immersion.
 - 6. Thermal Resistance: R-value (RSI-value) of 4.3 (0.76) per 1 inch (25.4 mm) at 75 degrees F (24 degrees C) mean temperature.
 - 7. Manufacturers:
 - a. Insulfoam Insulwall Platinum: www.insulfoam.com.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 BATT INSULATION MATERIALS

- A. Glass Fiber Batt Insulation: Flexible preformed batt or blanket, complying with ASTM C665; friction fit.
 - 1. Material: Glass fiber.
 - 2. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
 - 3. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
 - 4. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
 - 5. Sound Attenuation Blankets: Spun Mineral Fiber; meet ASTM C665, Type I (insulation without facing), Density and thickness required for STC shown.
 - 6. Thermal Resistance: R-value (RSI-value) of R (19).
 - 7. Facing: Asphalt treated Kraft paper, one side.

2.04 ACCESSORIES

- A. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inch (50 mm) wide.
- B. Insulation Fasteners: Impaling clip of unfinished steel with washer retainer, to be adhered to surface to receive insulation, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place. Provide with self locking washer where required. Provide Peel and Press manufactured by Gemco: www.gemcoinsulation.com, Tactoo manufactured by AGM Industries: www.agmind.com or equal.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.
- C. Verify substrate surfaces are flat, free of honeycomb, fins, or irregularities.

3.02 BOARD INSTALLATION AT FOUNDATION PERIMETER

- A. Adhere a 6 inches (152 mm) wide strip of polyethylene sheet over construction, control, and expansion joints with double beads of adhesive each side of joint.
- B. Apply adhesive to back of boards:
 - 1. Three continuous beads per board length.
 - 2. Full bed 1/8 inch (3.2 mm) thick.
- C. Install boards horizontally on foundation perimeter.

1. Butt edges and ends tightly to adjacent boards and to protrusions.
- D. Extend boards over expansion joints, unbonded to foundation on one side of joint.
- E. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.03 BATT INSTALLATION

- A. Install insulation in accordance with manufacturer's instructions.
- B. Install in exterior wall spaces without gaps or voids. Do not compress insulation.
- C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.
- E. Maintain 3 inch (76 mm) clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
- F. Faced Batt Insulation:
 1. Install with factory-applied vapor retarder membrane facing warm side of building spaces. Lap ends and side flanges of membrane over framing members.
 2. Staple or nail facing flanges in place at maximum 6 inches (152 mm) on center.
 3. Where no framing and other supports are present retain insulation batts in place with spindle fasteners at 12 inch (300 mm) on center.
 4. Tape seal butt ends, lapped flanges, and tears or cuts in membrane.

3.04 PROTECTION

- A. Do not permit installed insulation to be damaged prior to its concealment.

3.05 SCHEDULE

- A. Insulation at Perimeter of Foundation: 2.5 inch (51 mm) EPS at turn down slab edges, full depth. .
- B. Insulation in Wood Framed Walls:
 1. Batt insulation with integral vapor retarder. R-19 min..

END OF SECTION

SECTION 07 21 19

FOAMED-IN-PLACE INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Foamed-in-place insulation.
 - 1. In exterior framed walls.
 - 2. In exterior wall crevices.
 - 3. At junctions of dissimilar wall and roof materials.
 - 4. In underside of roofs and ceilings.

1.02 REFERENCE STANDARDS

- A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2010.
- B. ASTM D2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics; 2012.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- D. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2014.
- E. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).
- F. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials; 2013.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week prior to commencing work of this section.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide product description, insulation properties, and preparation requirements.
- C. Certificates: Certify that products of this section meet or exceed specified requirements.
- D. Manufacturer's Installation Instructions: Indicate special procedures, and perimeter conditions requiring special attention.
- E. Installer Qualification: Submit documentation of current contractor accreditation and current installer certification. Keep copies of all contractor accreditation and installer certification on site during and after installation. Present on-site documentation upon request.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with not less than three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified, with minimum three years documented experience, and approved by manufacturer.

1.06 FIELD CONDITIONS

- A. Do not apply foam when temperature is below that specified by the manufacturer for ambient air and substrate.
- B. Do not apply foam when temperature is within 5 degrees F (2.78 degrees C) of dew point.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Foamed-In-Place Insulation - Medium-density, rigid or semi-rigid, open or closed cell polyurethane foam; foamed on-site, using blowing agent of water or non-ozone-depleting gas.
 - 1. Scheduled at Type MD-1
 - 2. Regulatory Requirements: Comply with applicable code for flame and smoke and concealment limitations.
 - 3. Thermal Resistance: R-value (RSI-value) of 5.0 (0.88), minimum, per 1 inch (25.4 mm) thickness at 75 degrees F (24 degrees C) mean temperature when tested in accordance with ASTM C518.

4. Water Vapor Permeance: Vapor retarder; 2 perms (115 ng/(Pa s sq m)), maximum, when tested at intended thickness in accordance with ASTM E96/E96M, desiccant method.
5. Water Absorption: Less than 2 percent by volume, maximum, when tested in accordance with ASTM D2842.
6. Air Permeance: 0.04 cfm per square foot (0.2 L/(s/sq m)), maximum, when tested at intended thickness in accordance with ASTM E2178 at 1.57 psf (75 Pa).
7. Closed Cell Content: At least 90 percent.
8. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/450, maximum, when tested in accordance with ASTM E84.
9. Manufacturers:
 - a. BASF Corporation; WALLTITE US: www.spf.basf.com.
 - b. Demilec LLC; HEATLOK XT: www.demilec.com/sle.
 - c. Henry Company; Permax 2.0: www.henry.com/#sle.
 - d. Icynene-Lapolla; Lapolla Foam-Lok 2000-4G: www.icynene.com/#sle.
 - e. Johns Manville; JM Corbond III Closed Cell Spray Polyurethane Foam: www.jm.com/sle.
 - f. Bayer Material Science; BaySeal Closed Cell: www.spf.bayermaterialscience.com.
 - g. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 ACCESSORIES

- A. Primer: As required by insulation manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify work within construction spaces or crevices is complete prior to insulation application.
- B. Verify that surfaces are clean, dry, and free of matter that may inhibit insulation adhesion.

3.02 PREPARATION

- A. Mask and protect adjacent surfaces from over spray or dusting.
- B. Apply primer in accordance with manufacturer's instructions.

3.03 APPLICATION

- A. Apply insulation in accordance with manufacturer's instructions.
- B. Apply insulation by spray method, to a uniform monolithic density without voids.
- C. Patch damaged areas.
- D. Where applied to voids and gaps assure space for expansion to avoid pressure on adjacent materials that may bind operable parts.
- E. Trim excess away for applied trim or remove as required for continuous sealant bead.

3.04 PROTECTION

- A. Do not permit subsequent construction work to disturb applied insulation.

3.05 SCHEDULES

- A. MD-1:
 1. At expansion or other building movement joints in exterior wall and roof assemblies.
 2. In exterior framed walls at junction of roof framing.
 3. In exterior framed wall crevices.
 4. At junction of dissimilar wall and roof materials.
 5. Around penetrations in exterior walls and roof, as necessary.

END OF SECTION

SECTION 07 21 26

BLOWN INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Ceiling and Attic: Blown insulation pneumatically placed into joist spaces through access holes.

1.02 REFERENCE STANDARDS

- A. ASHRAE Std 90.1 I-P - Energy Standard for Buildings Except Low-Rise Residential Buildings; 2013, Including All Amendments and Errata.
- B. ASTM C739 - Standard Specification for Cellulosic Fiber (Wood-Base) Loose-Fill Thermal Insulation; 2011.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance criteria, and limitations.
- C. Certificates: Certify that products of this section meet or exceed specified requirements.
- D. Manufacturer's Installation Instructions: Indicate procedure for preparation and installation.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Applications: Provide blown insulation in cavities of roof joists as indicated on drawings.
- B. Thermal Resistance [R-value (RSI-value)]: Provided minimum values in accordance with applicable edition of ASHRAE Std 90.1 I-P for envelope requirements of building location and climate zone.
- C. Blown Insulation: ASTM C739, cellulosic fiber type, nodulated for pour and bulk for pneumatic placement.
 - 1. Installed Thickness: As indicated on drawings.

2.02 Accessories

- A. Roof Ventilation Baffles: Prefabricated ventilation channels for placement under roof sheathing with baffles to prevent wind-washing.
 - 1. Material: Polyvinyl chloride (PVC).
 - 2. Roof Joist/Truss Spacing: 24 inch (610 mm) on center, nominal.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate and adjacent materials are dry and ready to receive insulation.
- B. Verify that light fixtures have thermal cut-out device to restrict over-heating in soffit or ceiling spaces.
- C. Verify spaces are unobstructed to allow for proper placement of insulation.

3.02 INSTALLATION

- A. Install insulation in accordance with ASTM C1015 and manufacturer's instructions.
- B. Drill 3 inch (76 mm) diameter insulation access ports in fascia boards to permit equipment access.
- C. Place insulation pneumatically to completely fill joist and rafter spaces.
- D. Place insulation against baffles, and do not impede natural attic ventilation to soffit.
- E. Repair and reseal insulation access ports, and refinish to match adjacent work as necessary while still maintaining code required ventilation access at top and bottom of roof sheds.

3.03 CLEANING

- A. Remove loose insulation residue.

END OF SECTION

SECTION 07 24 00
EXTERIOR INSULATION AND FINISH SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Composite wall cladding of rigid insulation and reinforced finish coating (Class PB).
- B. Drainage and water-resistive barriers behind insulation board.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Sheathing on wood framing.
- B. Section 07 62 00 - Sheet Metal Flashing and Trim: Perimeter flashings.
- C. Section 07 92 00 - Joint Sealants: Sealing joints between EIFS and adjacent construction and penetrations through EIFS.
- D. Section 08 51 13: Perimeter window flashings and trim.

1.03 REFERENCE STANDARDS

- A. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2015a.
- B. ASTM C1397 - Standard Practice for Application of Class PB Exterior Insulation and Finish Systems (EIFS) and EIFS with Drainage; 2013.
- C. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2012.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- E. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2015.
- F. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2009).
- G. ASTM E2273 - Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies; 2003 (reapproved 2011).
- H. ASTM E2485/E2485M - Standard Test Method for Freeze/Thaw Resistance of Exterior Insulation and Finish Systems (EIFS) and Water Resistive Barrier Coatings; 2013.
- I. ASTM E2486/E2486M - Standard Test Method for Impact Resistance of Class PB and PI Exterior Insulation and Finish Systems (EIFS); 2013.
- J. ICC-ES AC212 - Acceptance Criteria for Water Resistive Coatings used as Water Resistive Barriers over Exterior Sheathing; 2005
- K. ICC-ES AC235 - Acceptance Criteria for EIFS Clad Drainage Wall Assemblies; 2004 (Editorially revised 2009).
- L. ISO 9001 - Quality Management Systems-Requirements; 2008.
- M. NFPA 259 - Standard Test Method for Potential Heat of Building Materials; 2013.
- N. NFPA 268 - Standard Test Method for Determining Ignitibility of Exterior Wall Assemblies Using a Radiant Heat Energy Source; 2012.
- O. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components; 2012.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on system materials, product characteristics, performance criteria, and system limitations.
- C. Shop Drawings: Indicate wall joint patterns, joint details, and molding profiles.

1. Include flashing, fastening and anchorage details including mechanical fasteners, and connections and attachments to other work.
- D. Selection Samples: Submit manufacturer's standard range of samples illustrating available coating colors and textures.
- E. Verification Samples: Submit actual samples of selected coating on specified substrate, minimum 12 inches (300 mm) square, illustrating project colors and textures.
 1. Include sealants samples to verify color selected.
- F. Manufacturer's Installation Instructions: Indicate preparation required, installation techniques, and jointing requirements.

1.05 QUALITY ASSURANCE

- A. Maintain copy of specified installation standard and manufacturer's installation instructions at project site during installation.
- B. EIFS Manufacturer Qualifications: Provide EIFS products other than insulation from the same manufacturer with qualifications as follows:
 1. Manufacturer of EIFS products for not less than 5 years.
 2. Manufacturing facilities ISO 9001 certified.
- C. Insulation Manufacturer Qualifications: Approved by manufacturer of EIFS and approved and labeled under third party quality program as required by applicable building code.
- D. Installer Qualifications: Company specializing in the type of work specified and with at least three years of documented experience.

1.06 MOCK-UP

- A. Construct mock-up of typical EIFS application on specified substrate, size as required to include examples of all key conditions, and including flashings, joints, and edge conditions.
- B. Mock-up may remain as part of the Work.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to project site in manufacturer's original, unopened containers with labels intact. Inspect materials and notify manufacturer of any discrepancies.
- B. Storage: Store materials as directed by manufacturer's written instructions.
 1. Protect adhesives and finish materials from freezing, temperatures below 40 degrees F (4 degrees C) and temperatures in excess of 90 degrees F (32 degrees C).
 2. Protect Portland cement based materials from moisture and humidity. Store under cover off the ground in a dry location.
 3. Protect insulation materials from exposure to sunlight.

1.08 FIELD CONDITIONS

- A. Do not prepare materials or apply EIFS under conditions other than those described in the manufacturer's written instructions.
- B. Do not prepare materials or apply EIFS during inclement weather unless areas of installation are protected. Protect installed EIFS areas from inclement weather for a minimum of 24 hours or until dry.
- C. Do not install EIFS materials, coatings or sealants when ambient temperature is below 40 degrees F (5 degrees C).
- D. Do not leave installed insulation board exposed to sunlight for extended periods of time. Remove any UV damage to installed insulation board by thoroughly rasping prior to installation of EIFS materials.

1.09 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide manufacturer's standard material warranty, covering a period of not less than 5 years.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design:
 - 1. Parex USA, Inc; Standard WaterMaster EIFS with Moisture Drainage: www.parex.com/#sle.
- B. Other Acceptable Exterior Insulation and Finish Systems Manufacturers:
 - 1. BASF Wall Systems; Senergy Channeled Adhesive CI Design: www.wallsystems.basf.com/#sle.
 - 2. Sto Corp; StoTherm ci: www.stocorp.com/#sle.
 - 3. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 EXTERIOR INSULATION AND FINISH SYSTEM

- A. Exterior Insulation and Finish System: DRAINAGE type; reinforced finish coating on mechanically-fastened insulation board over water resistive coating over substrate; provide a complete system that has been tested to show compliance with the following characteristics; include all components of specified system and substrate(s) in tested samples.
- B. Fire Characteristics:
 - 1. Flammability: Pass, when tested in accordance with NFPA 285.
 - 2. Ignitibility: No sustained flaming when tested in accordance with NFPA 268.
 - 3. Potential Heat of Foam Plastic Insulation Tested Independently of Assembly: No portion of the assembly having potential heat that exceeds that of the insulation sample tested for flammability (above), when tested in accordance with NFPA 259 with results expressed in Btu per square foot (MJ/sq m).
- C. Water Penetration Resistance: No water penetration beyond the plane of the base coat/insulation board interface after 15 minutes, when tested in accordance with ASTM E331 at 6.24 psf (299 Pa) differential pressure with tracer dye in the water spray; include in tested sample at least two vertical joints and one horizontal joint of same type to be used in construction; disassemble sample if necessary to determine extent of water penetration.
- D. Drainage Efficiency: Average minimum efficiency of 90 percent, when tested in accordance with ASTM E2273 for 75 minutes.
- E. Salt Spray Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating after 300 hours exposure in accordance with ASTM B117, using at least three samples matching intended assembly, at least 4 by 6 inches (100 by 150 mm) in size.
- F. Freeze-Thaw Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating when viewed under 5x magnification after 10 cycles, when tested in accordance with ICC-ES AC219 or ICC-ES AC235.
- G. Weathering Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating when viewed under 5x magnification after 2000 hours of accelerated weathering conducted in accordance with ASTM G153 Cycle 1 or ASTM G155 Cycles 1, 5, or 9.
- H. Water Degradation Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating after 14 days exposure, when tested in accordance with ASTM D2247.
- I. Mildew Resistance: No growth supported on finish coating during 28 day exposure period, when tested in accordance with ASTM D3273.
- J. Abrasion Resistance Of Finish: No cracking, checking or loss of film integrity when tested in accordance with ASTM D968 with 113.5 gallons (500 liters) of sand.
- K. Impact Resistance: Construct system to provide the following impact resistance without exposure of broken reinforcing mesh, when tested in accordance with ASTM E2486/E2486M:
 - 1. Standard: 25 to 49 in-lb (2.83 to 5.54 J), for areas not indicated as requiring higher impact resistance.
 - 2. Medium: 50 to 89 in-lb (5.65 to 10.1 J), for areas indicated on drawings.
 - 3. Ultra-High: Over 150 in-lb (17.1 J), for areas indicated on the drawings.

2.03 MATERIALS

- A. Finish Coat: Water-based, air curing, acrylic or polymer-based finish with integral color and texture.
 - 1. Texture: Medium.

2. Color: As selected from manufacturer's range of standard colors.
- B. Base Coat: Fiber-reinforced, acrylic or polymer-based product compatible with insulation board and reinforcing mesh, Class PB.
- C. Reinforcing Mesh: Balanced, open weave glass fiber fabric, treated for compatibility and improved bond with coating, weight, strength, and number of layers as required to meet required system impact rating.
- D. Insulation Board: Molded expanded polystyrene (EPS) board insulation, ASTM C578, Type XI, with the following characteristics:
 1. Board Size: 24 by 48 inches (610 by 1220 mm).
 2. Board Size Tolerance: Plus/minus 1/16 inch (1.5 mm) from square and dimension.
 3. Board Thickness: As indicated on drawings, but no less than 1 inch (25 mm).
 4. Thickness Tolerance: plus/minus 1/16 inch (1.5 mm) maximum.
 5. Board Edges: Square.
 6. Thermal Resistance (R factor per 1 inch (25.4 mm)) at 75 degrees F (24 degrees C): 3.60 (0.63).
 7. Board Density: 0.9 lb/cu ft (15 kg/cu m).
 8. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/450, when tested in accordance with ASTM E84.
- E. Sheathing: 7/16 inch (15.8 mm) exterior grade OSB sheathing meeting ASTM C79/ASTM C1396/ASTM C1177 or sheathing as indicated on the drawings.
- F. Water-Resistive Barrier Coating: Fluid-applied air and water barrier membrane; applied to sheathing; furnished or approved by EIFS manufacturer.
 1. Sheathing Joint Compound and Tape: Type recommended by EIFS manufacturer for sealing joints between and penetrations through sheathing.
- G. Fluid-Applied Flashing: Flexible water based polymer material suitable for use with reinforcing mesh and, if used with water-resistive barrier sheet, certified compatible with sheet material.
- H. Flashing Tape: Self-adhering rubberized asphalt tape with polyethylene backing or other material and surface conditioner furnished or approved by EIFS manufacturer.

2.04 ACCESSORY MATERIALS

- A. Insulation Fasteners: Fastener and plate system appropriate for substrate and as recommended by EIFS manufacturer.
 1. Corrosion-resistant fasteners.
- B. Metal Flashings: As specified in Section 07 62 00.
- C. Trim: EIFS manufacturer's standard PVC or galvanized steel trim accessories, as required for a complete project and including starter track and drainage accessories.
- D. Sealant Materials: Compatible with EIFS materials and as recommended by EIFS manufacturer.
 1. As selected by Architect from manufacturer's full range.
- E. Exterior Soffit Vents: One piece, perforated, ASTM A653/A653M galvanized steel with G90 coating, with edge suitable for direct application to gypsum board and manufactured especially for soffit application. Provide continuous vent.

PART 3 EXECUTION

3.01 GENERAL

- A. Install in accordance with EIFS manufacturer's instructions and ASTM C1397.
- B. Where different requirements appear in either document, comply with the most stringent.
- C. Neither of these documents supercedes the provisions of the Contract Documents that define the contractual relationships between the parties or the scope of work.

3.02 EXAMINATION

- A. Verify that substrate is sound and free of oil, dirt, other surface contaminants, efflorescence, loose materials, or protrusions that could interfere with EIFS installation and is of a type and construction that is acceptable to EIFS manufacturer. Do not begin work until substrate and adjacent materials are complete and thoroughly dry.

- B. Verify that substrate surface is flat, with no deviation greater than 1/4 in (6 mm) when tested with a 10 ft (3 m) straightedge.

3.03 PREPARATION

- A. Protect contiguous work from moisture deterioration and soiling caused by application of EIFS. Provide temporary covering and other protection needed to prevent spattering of exterior finish coats on other work.

3.04 INSTALLATION - GENERAL

- A. Install in accordance with EIFS manufacturer's instructions and ASTM C1397.
 - 1. Where different requirements appear in either document, comply with the most stringent.
 - 2. Neither of these documents supercedes provisions of Contract Documents that defines contractual relationships between parties or scope of this work.

3.05 INSTALLATION - WATER-RESISTIVE BARRIER

- A. Apply barrier coating as recommended by EIFS manufacturer; prime substrate as required before application.
- B. Seal all substrate joints, transitions and intersections with materials required by EIFS manufacturer to form continuous water-resistive barrier on exterior of sheathing, using method recommended by manufacturer.
- C. At door and window openings, apply water-resistive barrier to rough opening structure before installation of metal flashings, sills, or frames, using method recommended by manufacturer.
- D. Lap flexible flashing or flashing tape at least 2 inches (50 mm) on each side of joint or transition.
- E. Exterior Soffit Vents: Install according to manufacturer's written instructions and in locations indicated on drawings. Provide vent area indicated on drawings.

3.06 INSTALLATION - INSULATION

- A. Install in accordance with manufacturer's instructions.
- B. Install back wrap reinforcing mesh at all openings and terminations.
- C. On wall surfaces, install insulation boards horizontally in a running bond pattern.
- D. Place boards in a method to maximize tight joints. Stagger vertical joints and interlock at corners. Butt edges and ends tight to adjacent board and to protrusions. Achieve a continuous flush insulation surface, with no gaps in excess of 1/16 inch (1.6 mm).
- E. Fill gaps greater than 1/16 inch (1.6 mm) with strips or shims cut from the same insulation material.
- F. Rasp irregularities off surface of installed insulation board.
- G. Mechanical Fastening: Space fasteners as recommended by EIFS manufacturer.
- H. Cut aesthetic reveals in outside face of insulation with high-speed router and bit configured to produce grooves, rabbets, and other features that comply with profiles and locations indicated. Do not reduce insulation thickness at aesthetic reveals to less than 3/4 inch (19 mm).
- I. Form joints for sealant application by leaving gaps between adjoining insulation edges and between insulation edges and dissimilar adjoining surfaces. Make gaps wide enough to produce joint widths indicated after encapsulating joint substrates with base coat and reinforcing mesh

3.07 INSTALLATION - BASE COAT AND FINISH

- A. Base Coat: Apply in thickness as necessary to fully embed reinforcing mesh, wrinkle free, including back-wrap at terminations of EIFS. Install reinforcing fabric as recommended by EIFS manufacturer.
 - 1. Lap reinforcing mesh edges and ends a minimum of 2-1/2 inches (64 mm).
 - 2. Allow base coat to dry a minimum of 24 hours at 40 degrees F (4.4 degrees C) and rising before next coating application.
- B. As required by impact resistance requirements, install second layer of reinforcing mesh embedded in second application of base coat in accordance with manufacturer's requirements.
- C. Apply finish coat after base coat has dried not less than 24 hours, apply finish with a stainless steel trowel and float finish to a uniform texture and color. Do not apply finish to areas expected to receive sealant.
- D. Finish Coat Thickness: Approximately 1/16 inch (1.5 mm) or as recommended by manufacturer.

3.08 CLEANING

- A. Clean EIFS surfaces and work areas of foreign materials resulting from EIFS operations.

3.09 PROTECTION

- A. Protect completed work from damage and soiling by subsequent work.

END OF SECTION

SECTION 07 25 00

WEATHER BARRIERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Water-Resistive Barrier: Under exterior wall cladding, over sheathing or other substrate; not air tight or vapor retardant.
- B. Vapor Retarders: Materials to make exterior walls, joints between exterior walls and roof, and joints around frames of openings in exterior walls water vapor resistant and air tight.
- C. Air Barriers: Materials that form a system to stop passage of air through exterior walls, joints between exterior walls and roof, and joints around frames of openings in exterior walls.

1.02 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Vapor retarder under concrete slabs on grade.
- B. Section 06 10 00 - Rough Carpentry: Water-resistive barrier under exterior cladding.
- C. Section 07 21 00 - Thermal Insulation: Vapor retarder installed in conjunction with batt insulation.
- D. Section 07 24 00 - Exterior Insulation and Finish Systems: Water-resistive barrier under exterior insulation.
- E. Section 07 62 00 - Sheet Metal Flashing and Trim: Metal flashings installed in conjunction with weather barriers.
- F. Section 07 92 00 - Joint Sealants: Sealing building expansion joints.

1.03 DEFINITIONS

- A. Weather Barrier: Assemblies that form either water-resistive barriers, air barriers, or vapor retarders.
- B. Air Barrier: Air tight barrier made of material that is relatively air impermeable but water vapor permeable, both to the degree specified, with sealed seams and with sealed joints to adjacent surfaces. Note: For the purposes of this specification, vapor impermeable air barriers are classified as vapor retarders.
- C. Vapor Retarder: Air tight barrier made of material that is relatively water vapor impermeable, to the degree specified, with sealed seams and with sealed joints to adjacent surfaces.
 - 1. Water Vapor Permeance: For purposes of conversion, $57.2 \text{ ng}/(\text{Pa s sq m}) = 1 \text{ perm}$.

1.04 REFERENCE STANDARDS

- A. AATCC Test Method 127 - Water Resistance: Hydrostatic Pressure Test; 2014.
- B. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2006a (Reapproved 2013).
- C. ASTM D779 - Standard Test Method for Water Resistance of Paper, Paperboard, and Other Sheet Materials by the Dry Indicator Method; 2003.
- D. ASTM D4397 - Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications; 2010.
- E. ASTM D5590 - Standard Test Method for Determining the Resistance of Paint Films and Related Coatings to Fungal Defacement by Accelerated Four-Week Agar Plate Assay; 2000 (Reapproved 2010).
- F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- G. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2014.
- H. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2011.
- I. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials; 2013.
- J. ICC-ES AC308 - Acceptance Criteria for Water-Resistive Barriers; ICC Evaluation Service, Inc; 2013.
- K. ICC-ES AC208 - Acceptance Criteria for Water-Resistive Coatings Used as Water-Resistive Barriers over Exterior Sheathing; ICC Evaluation Service, Inc; 2015.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on material characteristics.
- C. Shop Drawings: Provide drawings of special joint conditions.
- D. ABAA Field Quality Control Submittals: Submit third-party reports of testing and inspection required by ABAA QAP.
- E. Manufacturer's Installation Instructions: Indicate preparation.
- F. ABAA Manufacturer Qualification: Submit documentation of current evaluation of proposed manufacturer and materials.
- G. ABAA Installer Qualification: Submit documentation of current contractor accreditation and current installer certification; keep copies of each contractor accreditation and installer certification on site during and after installation, and present on-site documentation upon request.

1.06 QUALITY ASSURANCE

- A. Air Barrier Association of America (ABAA) Quality Assurance Program (QAP); www.airbarrier.org/#sle:
 - 1. Installer Qualification: Use accredited contractor, certified installers, evaluated materials, and third-party field quality control audit.
 - 2. Manufacturer Qualification: Use evaluated materials from a single manufacturer regularly engaged in air barrier material manufacture, and use secondary materials approved in writing by primary material manufacturer.

1.07 FIELD CONDITIONS

- A. Maintain temperature and humidity recommended by the materials manufacturers before, during and after installation.

PART 2 PRODUCTS

2.01 WEATHER BARRIER ASSEMBLIES

- A. Water-Resistive Barrier: See Below.
 - 1. For barrier under EIFS, refer to 07 24 00 and use product by EIFS manufacturer unless otherwise indicated.
 - 2. At roof soffits, use fluid applied coating between sheathing and fiber cement panels. .

2.02 AIR BARRIER MATERIALS (WATER VAPOR PERMEABLE AND WATER-RESISTIVE)

- A. Air Barrier, Fluid Applied: Vapor permeable, elastomeric waterproofing.
- B. Air Barrier Coating:
 - 1. Material: Acrylic.
 - 2. Air Permeance: 0.004 cfm/sq ft (0.02 L/(s sq m)), maximum, when tested in accordance with ASTM E2178.
 - 3. Water Vapor Permeance: 18 perms (1030 ng/(Pa s sq m)), minimum, when tested in accordance with ASTM E96/E96M Procedure B (Water Method) at 73.4 degrees F (23 degrees C).
 - 4. Ultraviolet (UV) and Weathering Resistance: Approved in writing by manufacturer for up to six months of weather exposure after application.
 - 5. Elongation: 300 percent, minimum, when tested in accordance with ASTM D412.
 - 6. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.
 - 7. Nail Sealability: Pass, when tested in accordance with ASTM D1970/D1970M.
 - 8. Code Acceptance: Comply with applicable requirements of ICC-ES AC212.
 - 9. Sealants, Tapes and Accessories: As recommended by coating manufacturer.
 - 10. Manufacturers:
 - a. PROSOCO, Inc; R-GUARD Spray Wrap MVP: www.prosoco.com/r-guard/#sle.

2.03 ACCESSORIES

- A. Sealants, Tapes, and Accessories for Sealing Weather Barrier and Sealing Weather Barrier to Adjacent Substrates: As specified or as recommended by weather barrier manufacturer.
- B. Flexible Flashing: Self-adhesive sheet flashing complying with ASTM D1970/D1970M, except slip resistance requirement is waived if not installed on a roof.
- C. Liquid Flashing: One part, fast curing, non-sag, elastomeric, gun grade, trowelable liquid flashing.
- D. Thinners and Cleaners: As recommended by material manufacturer.
- E. Fasteners: Manufacturer's recommended corrosion-resistant, cap-headed steel or stainless steel nails, staples, or screws as appropriate for substrate.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces and conditions are ready to accept the work of this section.

3.02 PREPARATION

- A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.
- B. Clean and prime substrate surfaces to receive adhesives in accordance with manufacturer's instructions.

3.03 INSTALLATION

- A. Install materials in accordance with manufacturer's instructions.
- B. Air Barriers: Install continuous air tight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.
- C. Vapor Retarders: Install continuous air tight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.
- D. Apply sealants within recommended application temperature ranges. Consult manufacturer if temperature is out of this range.
- E. Coatings:
 - 1. Prepare substrate in manner recommended by coating manufacturer; treat joints in substrate and between dissimilar materials as recommended by manufacturer.
 - 2. Use flashing to seal to adjacent construction and to bridge joints.
- F. Openings and Penetrations in Exterior Weather Barriers:
 - 1. Install flashing over sills, covering entire sill frame member, extending at least 5 inches (125 mm) onto weather barrier and at least 6 inches (150 mm) up jambs; mechanically fasten stretched edges.
 - 2. At openings to be filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with sealing tape at least 4 inches (100 mm) wide; do not seal sill flange.
 - 3. At openings to be filled with non-flanged frames, seal weather barrier to each side of opening framing, using flashing at least 9 inches (230 mm) wide, covering entire depth of framing.
 - 4. At head of openings, install flashing under weather barrier extending at least 2 inches (50 mm) beyond face of jambs; seal weather barrier to flashing.
 - 5. At interior face of openings, seal gap between window/door frame and rough framing, using joint sealant over backer rod.
 - 6. Service and Other Penetrations: Form flashing around penetrating item and seal to weather barrier surface.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Do not cover installed weather barriers until required inspections have been completed.
- C. Obtain approval of installation procedures by the weather barrier manufacturer based on a mock-up installed in place, prior to proceeding with remainder of installation.

- D. Take digital photographs of each portion of the installation prior to covering up.

3.05 PROTECTION

- A. Do not leave materials exposed to weather longer than recommended by manufacturer.

END OF SECTION

SECTION 07 26 00

UNDER-SLAB VAPOR RETARDER FOR CONCRETE SLABS-ON-GRADE

PART 1 – GENERAL

1.01 SUMMARY

A. Products Supplied Under This Section

1. Vapor Retarder, seam tape, mastic, pipe boots for installation under concrete slabs.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Cast-in-place Concrete - Section 03 3000

B. Concrete Forming and Accessories - Section 03 2000

C. Earthwork for Building Construction - Section 31 2311

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM), latest versions:

1. ASTM E 96/-Standard Test Methods for Water Vapor
E96M Transmission of Materials
2. ASTM E 154-Standard Test Methods for Water Vapor Retarders Used in Contact with Earth
Under Concrete Slabs
3. ASTM E 1643-Standard Practice for Selection, Design, Installation and Inspection of Water
Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs
4. ASTM E 1745 Standard Specification for Plastic Water Vapor Retarders Used in Contact with
Soil or Granular Fill Under Concrete Slabs

B. American Concrete Institute (ACI), latest version

1. ACI 302.2R, Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials.

1.04 SUBMITTALS

A. Quality Control / Assurance

1. Comply with Section 01 3300 – Submittal Procedures.
2. Independent laboratory test results showing compliance with ASTM & ACI Standards.
3. Manufacturer's samples, literature
4. Manufacturer's installation instructions for placement, seaming and pipe boot installation

B. Delivery, Storage, and Handling

1. Deliver materials to site in manufacturer's original, unopened containers and packaging, with
labels clearly identifying product name and manufacturer.
2. Store materials in a clean dry area in accordance with manufacturer's instructions.
3. Stack membrane on smooth ground or wood platform to eliminate warping.
4. Protect materials during handling and application to prevent damage or contamination.
5. Ensure membrane is stamped with manufacturer's name, product name and membrane thickness at
intervals of no more than 85" (220 cm).

C. Environmental requirements

1. Product not intended for uses subject to abuse or permanent exposure to the elements.
2. Do not apply on frozen ground.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Vapor Retarder (Performance-Based Specifications)

1. Vapor Retarder must have the following qualities at minimum and meet floor finish manufacturer's warranty requirements.
 - a. Water Vapor Retarder ASTM E1745: Meets or exceeds Class A
 - b. Maximum Permeance ASTM E96: 0.01 Perms or as required to meet Flooring Manufacturer's Warranties.
 - c. Tensile Strength ASTM E154, Section 9: not less than 45 LBS. Force/Inch
 - d. Puncture Resistance ASTM D1709, Method B.
 - e. Thickness of Retarder (plastic) ACI 302.1R-96: Not less than 15 mils
 - f. Material: Virgin Polyethylene or Polyolefin
2. Vapor Retarder Products may be by one of the following manufacturers or an approved equal, as long as the requirements above are met.
 - a. Epro, <http://eproserve.com>
 - b. Fortifiber, <http://www.fortifiber.com>
 - c. Stego Industries, <http://www.stegoindustries.com>
 - d. W.R. Meadows, <http://www.wrmeadows.com>
 - e. Raven Industries, <http://www.vaporblock.com>
 - f. Reef Industries, <http://www.reefindustries.com>
 - g. Insulation Solutions, <http://www.insulationsolution.com>

2.02 ACCESSORIES

A. Seam Tape

1. Tape must have the following qualities:
 - a. Water Vapor Transmission Rate ASTM E 96 0.3 perms or lower

B. Vapor Proofing Mastic

1. Mastic must have the following qualities:
 - a. Water Vapor Transmission Rate ASTM E 96 0.3 perms or lower

C. Pipe Boots

1. Construct pipe boots from vapor Retarder material, pressure sensitive tape and/or mastic per manufacturer's instructions.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine surfaces to receive membrane. Ensure compaction requirements have been completed and geotechnical firm has confirmed compaction requirements have been met. Notify Architect if surfaces are not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected.

3.02 SURFACE PREPARATION

- A. Prepare surfaces in accordance with manufacturer's instructions.

3.03 INSTALLATION

- A. Install Vapor Retarder:

1. Installation shall be in accordance with manufacturer's instructions and ASTM E 1643.
 - a. Unroll Vapor Retarder with the longest dimension parallel with the direction of the pour.
 - b. Lap Vapor Retarder over footings and seal to foundation walls.
 - c. Overlap joints 6 inches and seal with manufacturer's tape.
 - d. Seal all penetrations (including pipes) per manufacturer's instructions.
 - e. No penetration of the Vapor Retarder is allowed except for reinforcing steel and permanent utilities.
 - f. Repair damaged areas by cutting patches of Vapor Retarder, overlapping damaged area 6 inches and taping all four sides with tape.

END OF SECTION 07 26 00

SECTION 07 46 46

FIBER-CEMENT SIDING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fiber-cement soffit panels.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Siding substrate.
- B. Section 09 91 13 - Exterior Painting: Field painting.

1.03 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- B. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- C. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric]; 2013.
- D. ASTM C1186 - Standard Specification for Flat Fiber Cement Sheets; 2008 (Reapproved 2012).

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturer's data sheets on each product to be used, including:
 - 1. Manufacturer's requirements for related materials to be installed by others.
 - 2. Preparation instructions and recommendations.
 - 3. Storage and handling requirements and recommendations.
 - 4. Installation methods, including nail patterns.
- C. Installer's Qualification Statement.
- D. Maintenance Instructions: Periodic inspection recommendations and maintenance procedures.
- E. Warranty: Submit copy of manufacturer's warranty, made out in Owner's name, showing that it has been registered with manufacturer.
- F. Warranty Documentation for Installation of Building Rainscreen Assembly: Submit installer warranty and ensure that forms have been completed in Owner's name and registered with installer.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of the type specified in this section with minimum three years of experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store products under waterproof cover and elevated above grade, on a flat surface.

1.07 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 FIBER-CEMENT SIDING

- A. Soffit Panels: Panels made of cement and cellulose fiber formed under high pressure with integral surface texture, complying with ASTM C1186, Type A, Grade II; with machined edges, for nail attachment.
 - 1. Texture: Simulated cedar grain, grooved.
 - 2. Length: 96 inches (2400 mm), nominal.
 - 3. Width: 48 inches (1220 mm).

4. Thickness: 5/16 inch (8 mm), nominal.
5. Finish: Factory applied stain.
6. Color: As selected by Architect from manufacturers full range of available colors.
7. Manufacturer: James Hardie Building Products, Inc. or prior approved equal.

2.02 ACCESSORIES

- A. Trim: Same material and texture as soffit.
- B. Fasteners: Galvanized or corrosion resistant; length as required to penetrate minimum 1-1/4 inch (32 mm).
- C. Exterior Soffit Vents: One piece, perforated, ASTM B221 (ASTM B221M), 6063 alloy, T5 temper, aluminum, with drip edge and manufactured especially for soffit application, and provide continuous vent.
- D. Sealant: Elastomeric, polyurethane or silyl-terminated polyether/polyurethane, and capable of being painted.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine substrate, clean and repair as required to eliminate conditions that would be detrimental to proper installation.
- B. Verify that weather barrier has been installed over substrate completely and correctly.
- C. Do not begin until unacceptable conditions have been corrected.
- D. If substrate preparation is responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Install Sheet Metal Flashing:
 1. At intersections of soffit and wall.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions and recommendations.
 1. Read warranty and comply with terms necessary to maintain warranty coverage.
 2. Use trim details indicated on drawings.
 3. Touch up field cut edges before installing.
 4. Pre-drill nail holes if necessary to prevent breakage.
- B. Allow space for thermal movement between both ends of soffit panels that butt against trim; seal joint between panel and trim with specified sealant.
- C. Exterior Soffit Vents: Install according to manufacturer's written instructions and in locations indicated on drawings, and provide vent area indicated on drawings.
- D. After installation, seal joints except lap joints of lap siding; seal around penetrations, and paint exposed cut edges.
- E. Finish Painting: Refer to Section 09 91 13.

3.04 PROTECTION

- A. Protect installed products until Date of Substantial Completion.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 07 61 13
ARCHITECTURAL 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.

1.2 SCOPE OF WORK

- A. Furnish and install a weather and watertight architectural standing seam sheet metal roof complete, in-place, per the Contract Documents.
- 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 typically 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: 2015 International Residential Code
 - 2. Energy Code: 2009 IECC
 - 3. External Fire Rating: UL Class C external fire rating.
- B. The completed roof system shall meet the following design wind load pressures calculated in accordance with the applicable building code:
 - 1. Field: -34 psf
 - 2. Perimeters: -42 psf
 - 3. Corners: -64 psf
 - 4. Overhang Perimeters: -44 psf
 - 5. Overhang Corners: -82 psf
- C. Perimeter and corner areas shall be calculated based upon the applicable building code requirements.

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. 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:
 - a. Roof panels
 - b. Roof trim
 - c. Roof insulation
 - d. 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. Products manufactured or accepted by:
1. Petersen Aluminum Corporation 150 – 180 Seam. 12" Smooth Panel, 22 GA Steel
 2. Substitutions: See Section 01 60 00 – Product Requirements.

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, wood framing members as indicated in Section 06 10 00 – Rough Carpentry.

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.

2.6 UNDERLAYMENT

- A. Underlayment shall be a cold-applied self-adhering membrane composed of reinforcement mat and modified butyl adhesive with an embossed slip resistant surface. Underlayment shall be designed and recommended for use with metal roofing in high temperature such as the desert southwest. Underlayment shall be a minimum of 30 mil thick.

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. 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: 22-gauge x 1'0" maximum 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 maximum possible to minimize end laps. Panels shall have two major corrugations nominally 2" high not including seam, 24" o.c., and minor corrugations spaced 12" o.c. maximum between and parallel to major corrugations.
1. Roof Panel Side Laps: Panels shall be designed to provide full double lock (180°) seam side laps when installed. Partial double lock seams, lapped seams, or friction fit seams will not be acceptable.
Factory-applied sealant shall be provided in female portion of seam.
- 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 will be as selected by Design Professional from Manufacturer's standards.
- D. Standing Seam Roof Panel Mounting Clip: Galvanized steel clip with stainless steel sliding clip tab. Galvanized clip shall be prepunched or predrilled for mounting to roof purlins. Sliding clip tab shall be designed to lock into and become an integral part of roof panel double lock seam. Provisions shall be incorporated into mounting clip assembly to keep sliding clip tab centered on mounting clip during installation of roof panels.
- 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.
 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 premolded 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, nonsag, nontoxic, nonstaining, 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, 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 full double lock field formed 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. Backpaint 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:
 - a. 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.
 - b. 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.
 - c. 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.
 - d. 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.

- e. 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 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.

WARRANTY FORMS FOLLOW

ROOFING CONTRACTOR'S WARRANTY

Trade:

Manufacturer and System Installed:

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 roofing system identified above have 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 5 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: (Officer)
Title:

Company:

Date Executed:

Roofing System Manufacturer's 20 Year Warranty

Manufacturer's Warranty Number:

Effective Date:

Manufacturer Name:

Telephone #:

Fax #:

E-Mail:

Address:

Total Warranty - Square Footage:

Roof Specification-System Name:

Roofing Contractor:

Address:

Telephone No.:

Fax

#. Other Information:

Expiration Date:

School District:

School:

Project:

Project Address:

Designer of Record:

Telephone #:

Fax#: Insulation Type(s):

E-Mail:

Address:

WARRANTY

- 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, lighting, 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:
a State of Corporation with principle office at:

OWNER:

BY: _____

BY: _____

TITLE: _____

TITLE: _____

DATE: _____

DATE: _____

END OF SECTION

SECTION 07 62 00
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 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 41 13 - Bid Form: Roofing production rates required by Contract.
 - 2. Section 01 30 00 – Administrative Requirements: Coordination of roofing work with Owner; roofing sequence inclusion in Project Schedule.
 - 3. Section 01 40 00 – Quality Requirements: Roofing observation services and reports; Contractor's responsibilities.
 - 4. Section 06 10 00 – Rough Carpentry.
 - 5. Section 07 61 13 – Metal Roof Panels.
 - 6. Section 07 90 05 – Joint Sealers.

1.02 SCOPE OF WORK

- A. Flashings, counter-flashings, sheet metal roofing flashings, gutters, downspouts, edge strips, formed wall flashing and trim and other fabricated sheet metal items.
- B. 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.

1.03 CODE COMPLIANCE

- A. **The installed copings and edge metal shall comply with ANSI/SPRI ES-1 Standards.**

1.04 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 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 ten installations, 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.

1.05 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.

1.06 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. Drawings of all shop and pre-manufactured components to show type and gauge of metal used. Gauges of sheet metal specified in this section are minimums. Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details. Submit color chart for pre-finished materials
- C. Submit product information or material list noting fasteners, sealants, sealant primers, sealant tapes, and other required accessories.
- D. Submit two sets of color chart or physical samples for selection of prefinished metal color by the Architect.
- E. Submit color chart or physical samples for selection of sealant color by the Architect.
- F. Submit copies of all required warranties.

1.07 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.
- 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.
- E. Prevent contact with materials which may cause discoloration or staining.

1.08 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 weathertight 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 metal roofing panels.
- 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.

1.09 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. Include metal roof flashing work within the roofing warranty.
- C. 20 year warranty on all coated metals.
- D. 20-year warranty for metal finish.

PART 2 PRODUCTS

2.01 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.

2.02 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.

2.03 MATERIAL SPECIFICATIONS

- A. Galvanized Steel:
 - 1. Galvanized steel shall be G-90 material.
 - 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.
- B. Kynar Prefinished Steel:
 - 1. Approved Products:
 - a. PAC-CLAD by Peterson Aluminum Corporation
 - b. Requests to use equivalent products of other manufacturers shall be submitted in accordance with Section 01 63 00 – Product Substitution Requirements.
 - 2. Source Limitations: Obtain all components including but not limited to trim, clips, fasteners, from the same manufacturer as the metal roofing panels unless noted otherwise. All components shall be manufactured and labeled from the same manufacturer to provide a total warranted system.
 - 3. Color shall be selected by the Architect from the Manufacturer's standard colors.

2.04 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. 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. Other prior 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. Other prior approved equal.
 - 5. Fasteners to be nominal 1/4" thickness minimum and of sufficient length to penetrate the steel 1/2" or into wood minimum 1".
 - 6. 1-1/4" x 11-gauge, galvanized, ring shank roofing nails shall be used for concealed fastening into wood.

2.05 STAINLESS STEEL FASTENERS

- A. All fasteners shall be Type 304 or Series 400 stainless steel, or zinc alloy in composition.
- B. 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. Other prior approved equal.
 - 4. Approved Products – Wood Fasteners:
 - a. 17 - 14 Scots Tek Screw with Climaseal Coating by ITW Buildex.
 - b. Other prior approved equal.

5. Fasteners to be of sufficient length to penetrate the steel 1/2" or into wood minimum 1".
6. 1-1/4" x 11-gauge, stainless steel, ring shank, roofing nails shall be used for concealed fastening into wood.

2.06 OTHER MATERIALS

A. 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.
 - a. Silyl-Termination Polyether (Hybrid) Sealant:
 - 1) Approved Products.
 - (a) Sonolastic 150 VLM by BASF Building Systems.
 - (b) Other prior approved equal.
 - b. Cleaner:
 - 1) Industrial solvent recommended by the sealant Manufacturer, such as Isopropyl Alcohol, Naphtha, Mineral Spirits, Xylol, Toluene, MEK, or Manufacturer-supplied cleaner.
 - c. Primer:
 - 1) General: Use only those primers that are specifically recommended for this installation by the caulking Manufacturer.
 - 2) Primer shall be one of the following:
 - (a) Primer 733 BASF Building Systems.
 - (b) Other prior approved equal.
 - d. Backer Rod:
 - 1) 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 1-1/2 times the width of the joint.
 - 2) Backer rod shall be one of the following:
 - (a) Soft Backer-Rod by BASF Building Systems.
 - (b) Other prior approved equal.
 - e. High Temperature Resistant Sealant:
 - 1) Trade Mate Hi-Temp Silicone Sealant by Dow Corning Corporation.
 - 2) Other prior approved equal.

B. 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.

C. Gutter & Downspout:

1. Gutters: Profile as indicated in drawings.
2. Downspouts: Closed rectangular profile as indicated in drawings.
3. Where referenced on the drawings, 1/16" x 1" gutter brackets and downspout straps shall be provided.
4. If gutters and downspouts are fabricated using prefinished or galvanized steel, shop primed and painted carbon steel brackets and straps shall be used (color to match gutters and downspouts).

D. Solder:

1. ASTM B 32, flux type and alloy composition as required for use with metals to be soldered.

E. Rivets:

1. Use copper, copper alloy, bronze, brass, or stainless steel for copper and stainless steel for stainless steel and aluminum alloy, galvanized steel or stainless steel for galvanized steel.
2. Not less than 1/8" diameter.

PART 3 EXECUTION

3.01 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.

3.02 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. Form flashing sections not less than 8'0" in length, unless otherwise approved prior to fabrication and installation. Counter-flashing shall overlap base flashing a minimum of 3".
- C. Edge metal shall be furnished where indicated on drawings. Form edge metal in sections not less than 8'0" 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 so as 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.

3.03 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.

3.04 WEATHERPROOFING

- A. Finish all sheet metal watertight and weathertight 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.

3.05 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.

3.06 FASTENING

- A. Only stainless steel fasteners shall be used to fasten aluminum components, where specified.
- B. Only stainless steel fasteners shall be used to fasten copper components, where specified.
- C. Secure metal as per detail drawings. Do not in any case install exposed fasteners on a horizontal plane, unless specifically shown on a particular detail drawing.
- D. All clips and cleats are to be fastened 6" o.c., unless otherwise noted on the drawings.
- E. On the roof facing side, copings are to be fastened 12" o.c. with EPDM washered fasteners, unless noted otherwise on the drawings.
- F. Do not fasten adjacent coping, counter-flashing, or edge metal sections together at laps or at joint covers, so as to limit expansion/contraction ability. Fasten through center of joint cover through butt joint gap between primary component sections.
- G. Embedded metal flanges are to be fastened 3" o.c., staggered.
- H. The specified spacings for all fasteners in perimeter metal work 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.
- I. For concealed fastening into wood, use annular ring shank roofing nails.
- J. For exposed fastening into wood, use screws with EPDM washers. Deformed shank nails shall not be used.
- K. Ensure that fasteners are not overdriven such that EPDM washer damage results. Remove and replace all such damaged fasteners, using oversized fasteners.

3.07 PROTECTION

- A. Roof surfaces and flashing shall be adequately protected to prevent damage during the installation of metal work. The Contractor shall repair, at no cost to the Owner, any materials damaged.

3.08 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.

END OF SECTION

SECTION 07 71 00
ROOF SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pipe and Penetration Flashing.

1.02 RELATED REQUIREMENTS

- A. Section 07 61 00 Sheet Metal Roofing.

1.03 REFERENCE STANDARDS

- A. NRCA (RM) - The NRCA Roofing Manual; 2017.
- B. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on shape of components, materials and finishes, anchor types and locations.
- C. Manufacturer's Installation Instructions: Indicate special procedures, fasteners, supporting members, and perimeter conditions requiring special attention.

PART 2 PRODUCTS

2.01 COMPONENTS

- A. Pipe and Penetration Flashing: Base of rounded aluminum, compatible with sheet metal roof systems, and capable of accommodating pipes sized between 3/8 inch (9.5 mm) and 12 inch (305 mm).
 - 1. Caps: EPDM.
 - 2. Color: Architect to choose from manufacturers standard range. .
- B. Roof Penetration Sealing Systems: Premanufactured components and accessories as required to preserve integrity of roofing system and maintain roof warranty; suitable for conduits and roofing system to be installed; designed to accommodate existing penetrations where applicable.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that deck, curbs, roof membrane, base flashing, and other items affecting work of this Section are in place and positioned correctly.

3.02 INSTALLATION

- A. Install components in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.
- B. Seal joints within components when required by component manufacturer.
- C. Coordinate installation of sealants and roofing cement with work of this section to ensure water tightness.

END OF SECTION

SECTION 07 71 23
MANUFACTURED GUTTERS AND DOWNSPOUTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Pre-finished aluminum gutters and downspouts.

1.02 RELATED REQUIREMENTS

- A. Section 07 61 00 - Sheet Metal Roofing.
- B. Section 07 62 00 - Sheet Metal Flashing and Trim.
- C. Section 09 91 13 - Exterior Painting: Field painting of metal surfaces.

1.03 REFERENCE STANDARDS

- A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2012.
- B. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- C. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2014.
- D. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Comply with SMACNA (ASMM) for sizing components for rainfall intensity determined by a storm occurrence of 1 in 5 years.
- B. Comply with applicable code for size and method of rain water discharge.
- C. Maintain one copy of each document on site.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on prefabricated components.
- C. Shop Drawings: Indicate locations, configurations, jointing methods, fastening methods, locations, and installation details.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Stack material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope to drain.
- B. Prevent contact with materials that could cause discoloration, staining, or damage.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Pre-Finished Aluminum Sheet: ASTM B209 (ASTM B209M); 0.032 inch (0.8 mm) thick.
 - 1. Finish: Plain, shop pre-coated with modified silicone coating.
 - 2. Color: As selected from manufacturer's standard colors.

2.02 COMPONENTS

- A. Gutters: Profile as indicated.
- B. Downspouts: CDA Rectangular profile.
- C. Anchors and Supports: Profiled to suit gutters and downspouts.
 - 1. Anchoring Devices: In accordance with CDA requirements.
 - 2. Gutter Supports: Brackets.
 - 3. Downspout Supports: Straps.
- D. Fasteners: Galvanized steel, with soft neoprene washers.

2.03 FABRICATION

- A. Form gutters and downspouts of profiles and size indicated.

- B. Fabricate with required connection pieces.
- C. Form sections square, true, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.
- D. Hem exposed edges of metal.
- E. Fabricate gutter and downspout accessories; seal watertight.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that surfaces are ready to receive work.

3.02 PREPARATION

- A. Paint concealed metal surfaces and surfaces in contact with dissimilar metals with protective backing paint to a minimum dry film thickness of 15 mil (0.4 mm).

3.03 INSTALLATION

- A. Install gutters, downspouts, and accessories in accordance with manufacturer's instructions.
- B. Sheet Metal: Join lengths with formed seams sealed watertight. Flash and seal gutters to downspouts and accessories.
- C. Set splash pans under downspouts.

END OF SECTION

SECTION 07 91 00
PREFORMED JOINT SEALS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Precompressed foam seals.

1.02 RELATED REQUIREMENTS

- A. Section 07 92 00 - Joint Sealants: Liquid and mastic joint sealants and their backing materials.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's technical data sheets for each product, including chemical composition, movement capability, color availability, limitations on application, and installation instructions.
- C. Manufacturer's Qualification Statement.
- D. Installer's Qualification Statement.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified in this section with at least three years of documented experience.

1.06 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a two year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealers that fail to achieve watertight seal or exhibit loss of adhesion or cohesion.

PART 2 PRODUCTS

2.01 PRECOMPRESSED FOAM SEALS

- A. Precompressed Foam Seal: Urethane foam impregnated with water-repellent, with self-adhesive faces protected prior to installation by release paper.
 - 1. Face Color: As selected by Architect from manufacturer's full line.
 - 2. Size as required to provide watertight seal when installed.
 - 3. Calculate size according to manufacturer's recommendations.
 - 4. Measure size of existing joints before selecting seal width.

2.02 FOAM SILL GASKET

- A. Foam sill gasket: Polyethylene foam gasket, with ridges on one side.
 - 1. Size to match width of framed sill plate.
 - 2. Pierce Sill Gasket at anchor bolt locations.
 - 3. Provide product with Green Guard Label
 - 4. Applications:
 - a. Under Exterior wall sill plate
 - 5. Manufacturers:
 - a. Owens Corning - ProPink ComfortSeal
 - b. Substitutions: See Section 01 60 00 - Substitution Requirements.

2.03 ACCESSORIES

- A. Adhesive: As recommended by seal manufacturer.

- B. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and strip seal.
- C. Substrate Cleaner: Non-corrosive, non-staining type recommended by seal manufacturer; compatible with joint forming materials.
- D. Primer: Type recommended by seal manufacturer to suit application; non-staining.
- E. Backing Tape: Self-adhesive polyethylene tape with surface that seal will not adhere to.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that joints are ready to receive this work.
- B. Measure joint dimensions and verify that seal products are of the correct size to properly seal the joints.

3.02 PREPARATION

- A. Properly prepare construction components adjacent to the work of this section to prevent damage and disfigurement due to this work.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's written instructions.

3.04 CLEANING

- A. Clean adjacent soiled surfaces.

3.05 PROTECTION

- A. Protect joints from damage until adhesives have properly cured.

END OF SECTION

SECTION 07 92 00

JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Nonsag gunnable joint sealants.
- B. Self-leveling pourable joint sealants.
- C. Joint backings and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 07 91 00 - Preformed Joint Seals: Precompressed foam, gaskets, and strip seals.
- B. Section 09 21 16 - Gypsum Board Assemblies: Sealing acoustical and sound-rated walls and ceilings.
- C. Section 09 30 00 - Tiling: Sealant between tile and plumbing fixtures and at junctions with other materials and changes in plane.

1.03 REFERENCE STANDARDS

- A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2006 (Reapproved 2011).
- B. ASTM C794 - Standard Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants; 2015.
- C. ASTM C834 - Standard Specification for Latex Sealants; 2014.
- D. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2012.
- E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014.
- F. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2013.
- G. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2008 (Reapproved 2012).
- H. ASTM C1311 - Standard Specification for Solvent Release Sealants; 2014.
- I. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2002 (Reapproved 2013).
- J. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition.
- K. 21CFR 177.2600 - Food and Drug Administration Code of Federal Regulations; 2016.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
 - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
 - 2. List of backing materials approved for use with the specific product.
 - 3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
 - 4. Substrates the product should not be used on.
 - 5. Substrates for which use of primer is required.
 - 6. Substrates for which laboratory adhesion and/or compatibility testing is required.
 - 7. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
- C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.
- D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience.

1.06 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal , exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Non-Sag Sealants: Permits application in joints on vertical surfaces without sagging or slumping.
 - 1. Dow Corning Corporation: www.dowcorning.com/construction/sle.
 - 2. Hilti, Inc: www.us.hilti.com/#sle.
 - 3. Pecora Corporation: www.pecora.com.
 - 4. Sika Corporation: www.usa-sika.com.
 - 5. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Self-Leveling Sealants: Pourable or self-leveling sealant that has sufficient flow to form a smooth, level surface when applied in a horizontal joint.
 - 1. Dow Corning Corporation: www.dowcorning.com/construction/sle.
 - 2. Pecora Corporation: www.pecora.com.
 - 3. Sika Corporation: www.usa-sika.com.
 - 4. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 JOINT SEALANT APPLICATIONS

- A. Scope:
 - 1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
 - a. Wall expansion and control joints.
 - b. Joints between door, window, and other frames and adjacent construction.
 - c. Joints between different exposed materials.
 - d. Openings below ledge angles in masonry.
 - e. Other joints indicated below.
 - 2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
 - a. Joints between door, window, and other frames and adjacent construction.
 - b. In sound-rated wall and ceiling assemblies, gaps at electrical outlets, wiring devices, piping, and other openings; between wall/ceiling and other construction; and other flanking sound paths.
 - c. Other joints indicated below.
 - 3. Do not seal the following types of joints.
 - a. Intentional weepholes in masonry.
 - b. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
 - c. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
 - d. Joints where installation of sealant is specified in another section.
 - e. Joints between suspended panel ceilings/grid and walls.
- B. Exterior Joints: Use non-sag non-staining silicone sealant, unless otherwise indicated.
- C. Interior Joints: Use non-sag polyurethane sealant, unless otherwise indicated.
 - 1. Wall and Ceiling Joints in Non-Wet Areas: Acrylic emulsion latex sealant.

2. Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; white.
 3. In Sound-Rated Assemblies: Acrylic emulsion latex sealant.
- D. Interior Wet Areas: Bathrooms and kitchens; fixtures in wet areas include plumbing fixtures, countertops, cabinets, and other similar items.
- E. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with food, provide products that comply with FDA Regulation 21CFR 177.2600.

2.03 JOINT SEALANTS - GENERAL

- A. Sealants and Primers: Provide products having lower volatile organic compound (VOC) content than indicated in SCAQMD 1168.

2.04 NONSAG JOINT SEALANTS

- A. Type 1A - Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 50 percent, minimum.
 2. Non-Staining To Porous Stone: Non-staining to light-colored natural stone when tested in accordance with ASTM C1248.
 3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
 4. Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.
 5. Color: Match adjacent finished surfaces.
 6. Cure Type: Single-component, neutral moisture curing.
 7. Modulus Type: Low modulus sealant.
 8. Service Temperature Range: 65 to 180 degrees F (54 to 82 degrees C).
 9. Manufacturers:
 - a. Dow Chemical Company; DOWSIL 790 Silicone Building Sealant: consumer.dow.com/en-us/industry/ind-building-construction.html/#sle.
 - b. Pecora Corporation; 864 NST: www.pecora.com.
 - c. Sika Corporation; Sikasil WS-290: www.usa-sika.com/#sle.
 - d. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Type 1B - Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 25 percent, minimum.
 2. Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.
 3. Color: Match adjacent finished surfaces.
 4. Cure Type: Single-component, neutral moisture curing
 5. Modulus Type: Medium modulus sealant.
 6. Service Temperature Range: Minus 65 to 180 degrees F (Minus 54 to 82 degrees C).
 7. Manufacturers:
 - a. Dow Corning Corporation; 791 Silicone Weatherproofing Sealant: www.dowcorning.com/construction/sle.
 - b. Pecora Corporation; 860: www.pecora.com.
 - c. Sika Corporation; Sikasil WS-295: www.usa-sika.com/#sle.
 - d. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Type 2B - Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; multi-component; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 50 percent, minimum.
 2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
 3. Color: Match adjacent finished surfaces.
 4. Service Temperature Range: Minus 40 to 180 degrees F (Minus 40 to 82 degrees C).
 5. Manufacturers:
 - a. Pecora Corporation; DynaTrol II: www.pecora.com.
 - b. Sika Corporation; Sikaflex-2c NS: www.usa-sika.com/#sle.

- c. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Type 3B - Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single component; not expected to withstand continuous water immersion or traffic.
 - 1. Movement Capability: Plus and minus 50 percent, minimum.
 - 2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
 - 3. Color: Match adjacent finished surfaces.
 - 4. Service Temperature Range: Minus 40 to 180 degrees F (Minus 40 to 82 degrees C).
 - 5. Manufacturers:
 - a. Pecora Corporation; DynaTrol 1-XL: www.pecora.com.
 - b. Sika Corporation; Sikaflex-1a: www.usa-sika.com.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.
- E. Type 4 - Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.
 - 1. Color: Match adjacent finished surfaces.
 - 2. Grade: ASTM C834; Grade - Minus 18 Degrees C.
 - 3. Manufacturers:
 - a. Pecora Corporation; AC-20: www.pecora.com.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.

2.05 SELF-LEVELING SEALANTS

- A. Type 2A - Self-Leveling Polyurethane Sealant: ASTM C920, Grade P, Uses M and A; multi-component; explicitly approved by manufacturer for traffic exposure; not expected to withstand continuous water immersion.
 - 1. Movement Capability: Plus and minus 25 percent, minimum.
 - 2. Hardness Range: 35 to 55, Shore A, when tested in accordance with ASTM C661.
 - 3. Color: Match adjacent finished surfaces.
 - 4. Service Temperature Range: Minus 40 to 180 degrees F (Minus 40 to 82 degrees C).
 - 5. Manufacturers:
 - a. Pecora Corporation; Urexpan NR-200: www.pecora.com.
 - b. Sika Corporation; Sikaflex-2c SL: www.usa-sika.com/#sle.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Type 3A - Self-Leveling Polyurethane Sealant: ASTM C920, Grade P, Uses M and A; single component; explicitly approved by manufacturer for traffic exposure; not expected to withstand continuous water immersion.
 - 1. Movement Capability: Plus and minus 25 percent, minimum.
 - 2. Hardness Range: 35 to 55, Shore A, when tested in accordance with ASTM C661.
 - 3. Color: Match adjacent finished surfaces.
 - 4. Service Temperature Range: Minus 40 to 180 degrees F (Minus 40 to 82 degrees C).
 - 5. Manufacturers:
 - a. Pecora Corporation; Urexpan NR-201: www.pecora.com.
 - b. Sika Corporation; Sikaflex-1c SL: www.usa-sika.com.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.

2.06 ACCESSORIES

- A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
 - 1. Joint Backing: ASTM C1330; Type C - Closed Cell Polyethylene.
 - 2. Closed Cell and Bi-Cellular: 25 to 33 percent larger in diameter than joint width.
- B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.
- C. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

- D. Joint Cleaner: Non-corrosive and non-staining type, type recommended by sealant manufacturer; compatible with joint forming materials.
- E. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that joints are ready to receive work.
- B. Verify that backing materials are compatible with sealants.
- C. Verify that backer rods are of the correct size.

3.02 PREPARATION

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.03 INSTALLATION

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Perform acoustical sealant application work in accordance with ASTM C919.
- D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.
- E. Install bond breaker backing tape where backer rod cannot be used.
- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- G. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- H. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.
- I. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.

3.04 SCHEDULE

- A. Exterior:
 - 1. Perimeters of exterior opening frames at adjoining materials:
(1B, 2B, 3B)
 - 2. Expansion and control joints in exterior surfaces of poured-in-place concrete, masonry, precast concrete and architectural precast concrete:
(1B, 2B, 3B)
 - 3. Perimeter joints in EIFS soffits:
(1B, 2B, 3B)
 - 4. Coping joints and coping-to-facade joints:
(1B, 2B, 3B)
 - 5. Metal flashing trim joints:
(1B, 2B, 3B)
 - 6. Cornice and wash (or horizontal surface joints):
(1B, 2B, 3B)
 - 7. Exterior joints in horizontal wearing surfaces - vehicle, pedestrian paving and paving to building joints:

- (2A)
- 8. Control and expansion joints open or soft joints in masonry under steel support members on the interior of exterior poured-in-place concrete:
(1B, 2B, 3B)
- 9. One inch 1 inch (25.4 mm) expansion joints shall be two part non-sag at vertical joints:
(1B, 3B)
- 10. One inch 1 inch (25.4 mm) expansion joints shall be two part self-leveling at horizontal joints:
(2A)
- B. Interior:
 - 1. Seal interior perimeters of exterior opening frames:
(1B, 2B, 3B, 4)
 - 2. Interior control and expansion joints in floor surfaces:
(2A, 3A)
 - 3. Perimeter of plumbing fixtures where they abut walls, counters and floors:
(1B)
 - 4. Joints of counters and backsplashes where they abut walls:
(1B, 4)
 - 5. Joints where gypsum board partitions abut walls and floors of same or dissimilar materials:
(1B, 2B, 3B)
 - 6. One inch 1 inch (25.4 mm) expansion joints shall be two part non-sag at vertical joints:
(2B, 3B)
 - 7. One inch 1 inch (25.4 mm) expansion joints shall be two part self-leveling at horizontal joints:
(2A)

END OF SECTION

SECTION 08 11 50
STEEL DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Steel entrance doors.

1.02 RELATED SECTIONS

- A. Section 061000 - Rough Carpentry.
- B. Section 062000 - Finish Carpentry.
- C. Section 09260 - Gypsum Board Assemblies.

1.03 REFERENCES

- A. American Architectural Manufacturer Association (AAMA):
 - 1. AAMA 1304 - Voluntary Specification for Forced Entry Resistance of Side-Hinged Door Systems.
 - 2. AAMA 506; Voluntary Specifications for Hurricane and Impact and Cycle Testing of Fenestration Products.
- B. Window & Door Manufacturers Association (WDMA):
 - 1. WDMA I.S.4 - Water Repellent Preservative Non-Pressure Treatment for Millwork.
 - 2. Sponsored Hallmark Certification Program.

1.04 SUBMITTALS

- A. Submit under provisions of Section 01300.
- 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: Submit shop drawings indicating details of construction, flashings and relationship with adjacent construction.
- D. Quality Assurance Submittals:
 - 1. Design Data, Test Reports: Provide manufacturer test reports indicating product compliance with indicated requirements.
 - 2. Manufacturer Instructions: Provide manufacturer's written installation instructions.
- E. Closeout Submittals: Refer to Section 01700 - Closeout Submittals.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum 2 years installing similar assemblies.
- B. Certifications: NAMI certification label indicating assemblies meet the design requirements.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and handle materials and products in strict compliance with manufacturer's instructions and recommendations and industry standards.
- B. Deliver and store assembly materials and components in manufacturer's original, unopened, undamaged containers with identification labels intact.
 - 1. Protect from damage and exposure to direct sunlight during storage.
 - 2. Store in a dry, well-ventilated area off the floor.
 - 3. During storage, do not remove paper or cardboard placed between products for shipment.
 - 4. Store in a humidity and temperature controlled facility. Recommended conditions: 30 to 50 percent relative humidity and 50 to 90 degrees F (10 to 32 degrees C).
- C. Handling: Handle with clean hands and equipment. Lift and carry the products when moving them. Do not drag across one another.

1.07 PROJECT CONDITIONS

- A. Maintain environmental conditions; temperature, humidity, and ventilation, within limits recommended by manufacturer for optimum results. Install only in vertical walls and when conditions are dry. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.08 WARRANTY

- A. Manufacturer's Standard Warranty: Assemblies will be free from defects in materials and workmanship from the date of manufacture for the time periods indicated below:
 - 1. Door Slab: 10 Years.
 - 2. Door System: 10 Years.
 - 3. Auralast Frame: Lifetime.
 - 4. Steel Frame: See manufacturers separate warranty.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Acceptable Manufacturer: JELD-WEN, Inc.
- B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.02 STEEL ENTRANCE DOORS

- A. Basis of Design: Contours Steel Doors as manufactured by JELD-WEN Incorporated.
- B. Performance Requirements:
 - 1. Structural Design Pressure: Provide doors capable of complying with requirements indicated:
 - a. As indicated on drawings.
 - b. Impact (Windborne-Debris) Resistance: Capable of resisting impact, in accordance with ASTM E1886 and ASTM E1996.
 - 1) Provide doors tested in accordance with FBC Section 1626.
 - 2) Provide doors tested in accordance with FBC, TAS 201, TAS 202 and TAS 203.
- C. Materials:
 - 1. Wood Frames: Western Pine.
 - a. Preservative treated with AuraLast in accordance with WDMA I.S.4.
 - b. Steel Skins: Galvanized steel. 0.0195 in (0.495 mm) plus or minus 2 percent.
 - c. Stiles and Rails:
 - 1) Steel Edge Construction: Galvanized Steel; 0.028 in (0.7 mm) continuous roll-formed steel.
 - d. Core: Custom-fitted Polystyrene.
 - e. Thickness: 1-3/4 in (44 mm).
 - f. Edge Construction: Steel.
- D. Door Design:
 - 1. Door Surface: Smooth.
 - 2. Door Shape: Squared Top.
 - 3. Door Style: Solid
 - 4. Face Pattern: 2-Panel Square Top Flat
 - 5. Bottom Rail: [8-5/8 in (225 mm) (Standard)] [ADA, 10-1/8 in (257 mm)].
 - 6. Panel Profile: Ovolo
 - 7. Finish: Two-coats, low-sheen, baked-on enamel primer.
 - 8. Hardware: None. Prep door for owner supplied hinge and lockset.
- E. Profile: System 01, Single Door
- F. Jamb:
 - 1. Material: Solid pine
 - 2. Profile: Rabbeted.
 - 3. Width: 6-9/16 in (167 mm), or as required to properly seal in exterior wall.

2.03 FABRICATION

- A. Construction: One-piece of polystyrene is custom fitted in standard steel stile and rail frame. Back of steel skin is coated with epoxy primer before attachment to core and frame.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspect doors prior to installation. Verify doors are suitable for installation
- B. Inspect rough opening for compliance with door manufacturer recommendations. Verify rough opening conditions are within recommended tolerances.

3.02 INSTALLATION

- A. Install doors in accordance with manufacturer's installation guidelines and recommendations.
- B. Install Jamb Assembly:
 - 1. Caulk sill along outside edge and 1/2 in (13 mm) in from edge of subfloor.
 - 2. Set door unit into center of opening and tack in place.
 - 3. Shim hinge then latch side jambs straight. Inspect jamb for square, level and plumb.
 - 4. Fasten hinge side jamb to studs.
 - 5. Verify door opens freely and weatherstrip meets door evenly.
 - 6. Verify door sweep contacts threshold evenly.
 - 7. Fasten latch side jamb to studs.
- C. Caulk outside perimeter of door unit between brickmold and wall face, along front side of threshold, and between jamb sides and threshold.

3.03 PROTECTION

- A. Protect installed doors from damage.
 - 1. SCHEDULES
- B. Door Type A
 - 1. Basis of Design: Contours®, CT-21

END OF SECTION

SECTION 08 16 00.00
MOLDED COMPOSITE DOORS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Interior Molded Doors: Passage Doors, Bifold Doors.

1.02 RELATED REQUIREMENTS

- A. Section 08 10 00 - Door Hardware.

1.03 REFERENCES

- A. Window & Door Manufacturers Association (WDMA)
 - 1. WDMA TM-7: Cycle Slam.
 - 2. WDMA TM-8: Hinge Loading.
- B. National Fire Protection Association (NFPA):
 - 1. NFPA 252: Standard Methods of Fire Tests of Door Assemblies.
 - 2. NFPA 80: Standard Methods for builders' hardware to be used in fire rated swing doors.
- C. Underwriters Laboratories, Inc. (UL):
 - 1. UL10B: Standard for Fire Tests of Door Assemblies (Note: Neutral pressure testing standard).
 - 2. UL 10C: Standard for Positive Pressure Fire Tests of Door Assemblies.
 - 3. GREEN GUARD: CA 01350, Indoor Air Quality (IAQ) Testing

1.04 SUBMITTALS

- A. Submit under provisions of Section 01 60 00 – Administrative Requirements.
- B. Product Data: Submit door manufacturer current product literature, including installation instruction.
- C. Samples: Provide finish samples for all products.
- D. Quality Assurance Submittals
 - 1. Manufacturer Instructions: Provide manufacturer's written installation instructions.
- E. Closeout Submittals: Refer to Section 0 17 00 Execution and Closeout Requirements Closeout Submittals.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver doors, materials and components in manufacturer's original, unopened, undamaged containers with identification labels intact.
- B. Store doors as recommended by manufacturer.

1.06 WARRANTY

- A. Manufacturer's Standard Warranty: Assemblies will be free from defects in materials and workmanship from the date of manufacture for the time periods indicated below:
 - 1. Basic Product Coverage: Owner Occupied Single-Family Residence: 5 years.
 - 2. Door Frames: 1 year.
 - 3. Factory Prefinish: 1 year. Warranted against peeling, checking or cracking.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. Acceptable Manufacturer: JELD-WEN, Inc.;
- B. Requests for substitutions will be considered in accordance with provisions of Section 0 16 00 – Product Requirements.
- C. Basis of Design: Doors are based on JELD-WEN®'s Molded Interior Doors: [Cambridge] [Caiman] [Camden] [Carrara] [Colonist] [Conmore] [Continental] [Craftsman III] [Impression] [Madison] [Monroe] [Birkdale] [Princeton] [Rockport] [Santa Fe] [Prefinished] [SL100] [SL130].

2.02 PASSAGE DOORS

- A. Door Style:
 - 1. Door Type: Flush.
 - 2. Door Shape: Squared Top.
 - 3. Surface Finish: Smooth.
- B. Core and Frame:
 - 1. Hollow core with Combination wood/MDF.
 - a. Thickness: 1-3/4 inch (44.4 mm).
- C. Hardware: None.
 - 1. Prep door for owner supplied contractor installed hinge and lockset.
 - 2. Face Bore: 2-1/8 inch (54.1 mm) (Standard).
 - 3. Backset: 2-3/8 inch (60.5 mm) (Standard).
- D. Finish:
 - 1. Unfinished Hardwood Veneer
 - a. Sliced Red Oak
 - b. Prepped for field application of stain. Color To be determined by architect.

2.03 BIFOLD DOORS

- A. Door Style:
 - 1. Surface Finish: Flush
 - a. Surface Finish: Smooth
- B. Core:
 - 1. Hollow core.
 - a. Thickness: 1-3/8 inch (35.1 mm).
- C. Hardware: None
 - 1. Prep door for owner supplied contractor installed bifold door hardware.
- D. Finish: Unfinished Hardwood Veneer
 - 1. Sliced Red Oak
 - 2. Prepped for field application of stain. Color to be determined by architect.

PART 3 - EXECUTION

3.01 GENERAL

- A. Install doors in accordance with manufacturer's installation guidelines and recommendations.

3.02 EXAMINATION

- A. Inspect door prior to installation.
- B. Inspect rough opening for compliance with door manufacturer recommendations. Verify rough opening conditions are within recommended tolerances.

3.03 PREPARATION

- A. Prepare door for installation in accordance with manufacturer's recommendations.
- B. Trim bottom of jamb sides to achieve desired distance between door bottom and finished floor height.

3.04 PASSAGE DOOR INSTALLATION

- A. Place door unit into opening and level hinge side of jamb. Use shims fastened through jamb and stop to level and temporarily secure in place.
- B. Level latch side of jamb. Use shims fastened through jamb and stop to level and temporarily secure in place.
- C. Verify spacing between jamb and door is uniform on all sides. Adjust as necessary.
- D. Shim top of jamb in center of opening and fasten with nail.
- E. Re-check for square, level and even spacing around door. Nail securely in place through stop, jamb, shims and into studs every 12 inches.

- F. Set nails.
- G. Install trim on both sides using nails every 12 to 16 inches.

3.05 BIFOLD DOOR INSTALLATION

- A. Attach door hardware to door.
- B. Attach jamb hardware.
 - 1. Fasten overhead track in center of finished opening by inserting screws through pre-drilled holes.
 - 2. Attach jamb brackets flush to finished floor in line with overhead track.
- C. Install door assemblies.
 - 1. Place pivot pin in hole at top corner bracket and place guide wheel in track.
 - 2. Lift door assembly and drop bottom pin into bottom bracket hole.
- D. Check positioning and operation. Adjust hardware if necessary.

3.06 SCHEDULES

- A. Door Type B, C, E
 - 1. Style: Passage
 - 2. Door Design: Flush
 - 3. Surface Finish: Smooth
 - 4. Core and Frame: Hollow core with Combination wood/MDF.
 - 5. Thickness: 1-3/4 inch
 - 6. Door Finish: Unfinished Hardwood Veneer
 - 7. Species: Red Oak, sliced
 - 8. Profile: System 01, Single Door.
 - 9. Jamb Width: As indicated on drawings
 - 10. Jamb Type: Split
 - 11. Jamb Species: Paintable pine.
- B. Door Type D
 - 1. Style: Bifold
 - 2. Door Design: Flush
 - 3. Surface Finish: Smooth
 - 4. Core and Frame: Hollow core with Combination wood/ MDF
 - 5. Frame: All-wood
 - 6. Thickness: 1-3/8".
 - 7. Door Finish: Unfinished Hardwood Veneer
 - 8. Species: Red Oak, sliced
 - 9. Profile: Bifolding Double Doors
 - 10. Jamb Width: As indicated on drawings
 - 11. Jamb Type: Flat
 - 12. Jamb Species: Paintable Pine

END OF SECTION

SECTION 08 51 13

ALUMINUM WINDOWS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Extruded aluminum windows with operating sash.
- B. Factory glazing.
- C. Operating hardware.
- D. Insect screens.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Rough opening framing.
- B. Section 06 10 00 - Rough Carpentry: Wood perimeter shims.
- C. Section 06 20 00 - Finish Carpentry.
- D. Section 07 24 00 - Exterior Insulation and Finish Systmes: Sealing frame to weather barrier installed on adjacent construction.
- E. Section 07 92 00 - Joint Sealants: Sealing joints between window frames and adjacent construction.

1.03 REFERENCE STANDARDS

- A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for windows, doors, and skylights; 2011.
- B. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; 2015.
- C. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document); 2015.
- D. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections; 2009.
- E. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2009).
- F. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference; 2015.
- G. ASTM F588 - Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact; 2014.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week before starting work of this section.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide component dimensions, information on glass and glazing, internal drainage details, and descriptions of hardware and accessories.
- C. U-Factor and structural rating charts required for AAMA and NFRC labeling requirements.
- D. Shop Drawings: Indicate opening dimensions, elevations of different types, framed opening tolerances, method for achieving air and vapor barrier seal to adjacent construction, anchorage locations, flashing, and installation requirements.
- E. Samples: Submit two samples, 12 by 12 inch (300 by 300 mm) in size illustrating typical corner construction, accessories, and finishes.
 - 1. Submit samples of glass, showing tint color.
- F. Grade Substantiation: Prior to submitting shop drawings or starting fabrication, submit one of the following showing compliance with specified grade:

1. Evidence of AAMA Certification.
 2. Evidence of WDMA Certification.
 3. Evidence of CSA Certification.
 4. Test report(s) by independent testing agency itemizing compliance and acceptable to authorities having jurisdiction.
- G. Certificates: Certify that windows meet or exceed specified requirements.
- H. Manufacturer's Installation Instructions: Include complete preparation, installation, and cleaning requirements.
- I. Field Quality Control Submittals: Report of field testing for water penetration and air leakage.
- J. Manufacturer's Qualification Statement.
- K. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.
- C. U-Factor and structural rating charts required for AAMA and NFRC labeling requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of AAMA CW-10.
- B. Protect finished surfaces with wrapping paper or strippable coating during installation. Do not use adhesive papers or sprayed coatings that bond to substrate when exposed to sunlight or weather.

1.08 FIELD CONDITIONS

- A. Do not install sealants when ambient temperature is less than 40 degrees F (5 degrees C).
- B. Maintain this minimum temperature during and 24 hours after installation of sealants.

1.09 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide five year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.
- C. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

1.10 CERTIFICATIONS FOR INSULATED GLASS WINDOWS:

- A. AAMA: Windows shall be Gold Label certified with label attached to frame per AAMA requirements.
- B. NFRC: Windows shall be NFRC certified with temporary U-factor label applied to glass and NFRC tab added to permanent AAMA frame label.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design: Milgard Manufacturing, INC..

2.02 ALUMINUM WINDOWS

- A. Aluminum Windows: Extruded aluminum frame and sash, factory fabricated, factory finished, with operating hardware, related flashings, and anchorage and attachment devices. Comply with requirements of AAMA/WDMA/CSA 101/I.S.2/A440-05, 6063-T5 temper for strength, corrosion resistance and application of required finish.
1. Frame Depth: 2-1/4 inch (57 mm).
 2. Operable Units: Double weatherstripped.
 3. Provide units factory glazed.

4. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors; fasteners and attachments concealed from view; reinforced as required for operating hardware and imposed loads.
 5. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
 6. Movement: Accommodate movement between window and perimeter framing and deflection of lintel, without damage to components or deterioration of seals.
 7. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
 8. Thermal Movement: Design to accommodate thermal movement caused by 180 degrees F (82.2 degrees C) surface temperature without buckling stress on glass, joint seal failure, damaging loads on structural elements, damaging loads on fasteners, reduction in performance or other detrimental effects.
- B. Performance Requirements: Provide products that comply with the following:
1. Grade: AAMA/WDMA/CSA 101/I.S.2/A440 requirements for specific window type:
 - a. Performance Class (PC): R.
- C. Performance Requirements:
1. Grade: AAMA/WDMA/CSA 101/I.S.2/A440 AW100.
 2. Movement: Accommodate movement between window and perimeter framing and deflection of lintel, without damage to components or deterioration of seals.
 3. Air Infiltration Test Pressure Differential: 6.24 pounds per square inch.
 4. Condensation Resistance Factor: Measured in accordance with AAMA 1503.
 5. Water Leakage: None, when measured in accordance with ASTM E331 and E 547.
 6. Air and Vapor Seal: Maintain continuous air barrier and vapor retarder throughout assembly.
 7. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, or migrating moisture occurring within system.
 8. Forced Entry Resistance: Conform to ASTM F588 requirements for performance level 10 for window type A.
- D. Outswinging Casement Type: 01
1. Basis of Design: Milgard 920 Series
 2. 1 5/16" nail fin setback.
 3. 1 1/2" solid aluminum extrusion sash.
 4. Construction: Thermally broken.
 5. Provide screens.
 6. Glazing: Double; clear; low-e.
 7. Exterior Finish: Bronze anodized.
 8. Interior Finish: Bronze anodized.
 9. Hardware:
 - a. Cam Style locking mechanism with latch on jamb.
 - b. Tension adjustable hinge
 - c. Must meet egress window requirements.
 10. Weatherstripping: provided by manufacturer
- E. Outswinging Awning Type: 03
1. Basis of Design: Milgard 920 Series
 2. 1 5/16" nail fin setback.
 3. 1 1/2" solid aluminum extrusion sash.
 4. Construction: Thermally broken.
 5. Provide screens.
 6. Glazing: Double; clear; low-e.
 7. Exterior Finish: Bronze anodized.
 8. Interior Finish: Bronze anodized.
 9. Hardware:
 - a. Cam style locking mechanism, use with extension poles.

- b. Tension adjustable hinge.
- 10. Weatherstripping: provided by manufacturer
- F. Horizontal Sliding Type: 04, 05
 - 1. Basis of Design: Milgard 1120 Series
 - 2. 1 5/16" nail fin setback
 - 3. 1 1/8" Solid aluminum extrusion sash.
 - 4. Construction: Thermally broken.
 - 5. Provide screens.
 - 6. Glazing: Double; clear; low-e.
 - 7. Exterior Finish: Bronze anodized.
 - 8. Interior Finish: Bronze anodized.
 - 9. Hardware:
 - a. Nylon rollers with stainless steel axles, aluminum integral monorail track.
 - b. Single Pull rail on meeting rail sash.
 - c. Automatic, spring loaded, height adjustable positive lock.
 - d. Must meet egress requirements at bedrooms.
 - 10. Weatherstripping: provided by manufacturer.
- G. Single-Hung Type: 02
 - 1. Basis of Design: Milgard 1520 Series
 - 2. 1 5/16" nail fin setback
 - 3. 1 1/8" solid aluminum extrusion sash.
 - 4. Construction: Thermally broken.
 - 5. Provide screens.
 - 6. Glazing: Double; clear; low-e. at laundry rooms. Double, obscure, low-e at bathrooms.
 - a. Obscure Glazing: Matelux or prior approved equal.
 - 7. Exterior Finish: Bronze anodized.
 - 8. Interior Finish: Bronze anodized.
 - 9. Hardware:
 - a. Concealed block and tackle balancer.
 - b. Single pull rail (sash lifts) on meeting rail sash.
 - c. Automatic, spring loaded, with adjustable positive lock.
 - 10. Weatherstripping: provided by manufacturer

2.03 COMPONENTS

- A. Frames: 2 - 5/8" inch (66.7 mm) wide by approx. 2-1/2" inch (63.5 mm) deep profile, of .06" inch (1.5 mm) thick section; thermally broken with interior portion of frame insulated from exterior portion; flush glass stops of screw fastened type.
- B. Insulated Infill Panel:
 - 1. Outer Face: 1 5/16" inch (34 mm) thick aluminum.
 - 2. Core: Rigid polyurethane insulation core with R-value of 5 (RSI-value of .88).
 - 3. Inner Face: 1 5/16" inch (34 mm) thick aluminum.
- C. Insect Screen Frame: Rolled aluminum frame of rectangular sections; fit with adjustable hardware; nominal size similar to operable glazed unit.
- D. Insect Screens: 14/18 mesh, steel strands.
- E. Operable Sash Weatherstripping: Nylon pile; permanently resilient, profiled to achieve effective weather seal.
- F. Fasteners: Stainless steel.
- G. Sealant for Setting Sills and Sill Flashing: Non-curing butyl type.

2.04 GLAZING

- A. Insulated Glass Units:
 - 1. ASTM E 774, Class A 1 inch tick overall except 1120/1520 series which are 3/4" thick.

2. Glazing Type: Clear / Suncoat Low-E
3. Spacer Bar: Warm edge foam spacer

2.05 HARDWARE

- A. Sash lock: Lever handle with cam lock.
 1. Provide 6 feet (0 m) long pole handle for Type 03 windows.
- B. Operator: Lever action handle fitted to projecting sash arms with limit stops.
- C. Projecting Sash Arms: Cadmium plated steel, friction pivot joints with nylon bearings, removable pivot clips for cleaning.
- D. Window Opening Control Devices (WOCD): Provide operable window sash hardware that limits openings to only allow passage of 4 inch (102 mm) diameter rigid sphere or less, and are easily releasable to fully open without use of keys, tools, or special knowledge.
- E. Pulls: Manufacturer's standard type.

2.06 FABRICATION

- A. Fabricate components with smallest possible clearances and shim spacing around perimeter of assembly that will enable window installation and dynamic movement of perimeter seal.
- B. Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.
- C. Prepare components to receive anchor devices.
- D. Arrange fasteners and attachments to ensure concealment from view.
- E. Prepare components with internal reinforcement for operating hardware.
- F. Provide steel internal reinforcement in mullions as required to meet loading requirements.
- G. Provide internal drainage of glazing spaces to exterior through weep holes.
- H. Assemble insect screen frames with mitered and reinforced corners. Secure wire mesh tautly in frame. Fit frame with four, spring loaded steel pin retainers.
- I. Double weatherstrip operable units.
- J. Factory glaze window units.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that wall openings and adjoining air and vapor seal materials are ready to receive aluminum windows.
- B. Coordinate with responsible entity to correct unsatisfactory conditions.
- C. Commencement of work by installer is acceptance of substrate conditions.

3.02 INSTALLATION

- A. Install windows in accordance with manufacturer's instructions.
- B. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.
- C. Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.
- D. Install sill and sill end angles.
- E. Provide thermal isolation where components penetrate or disrupt building insulation. Foam in place insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- F. Install operating hardware not pre-installed by manufacturer.

3.03 TOLERANCES

- A. Maximum Variation from Level or Plumb: 1/16 inches every 3 ft (1.5 mm/m) non-cumulative or 1/8 inches per 10 ft (3 mm/3 m), whichever is less.

3.04 FIELD QUALITY CONTROL

- A. Test installed windows for compliance with performance requirements for water penetration, in accordance with ASTM E1105 using uniform pressure and the same pressure difference as specified for laboratory testing.
 - 1. If any window fails, test additional windows at General Contractor's expense.
- B. Replace windows that have failed field testing and retest until performance is satisfactory.

3.05 ADJUSTING

- A. Adjust hardware for smooth operation and secure weathertight closure.

3.06 CLEANING

- A. Remove protective material from factory finished aluminum surfaces.
- B. Wash surfaces by method recommended and acceptable to window manufacturer; rinse and wipe surfaces clean.
- C. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.
- D. Remove excess glazing sealant by moderate use of mineral spirits or other solvent acceptable to sealant and window manufacturer.

END OF SECLTION

SECTION 08 71 00
DOOR HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Mechanical and electrified door hardware for:
 - a. Swinging doors.
 - b. Sliding doors.
 - c. Gates.
 - 2. Electronic access control system components
 - 3. Field verification, preparation and modification of existing doors and frames to receive new door hardware.
- B. Section excludes:
 - 1. Windows
 - 2. Cabinets (casework), including locks in cabinets
 - 3. Signage
 - 4. Toilet accessories
 - 5. Overhead doors
- C. 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 07 Section "Joint Sealants" for sealant requirements applicable to threshold installation specified in this section.
 - 5. Division 08 Sections:
 - a. "Metal Doors and Frames"
 - b. "Flush Wood Doors"
 - c. "Stile and Rail Wood Doors"
 - d. "Interior Aluminum Doors and Frames"
 - e. "Aluminum-Framed Entrances and Storefronts"
 - f. "Stainless Steel Doors and Frames"
 - g. "Special Function Doors"
 - h. "Entrances"

1.02 REFERENCES

- A. UL - Underwriters Laboratories
 - 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. Key Systems and Nomenclature
- 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/BHMA A156.1 - A156.29, and ANSI/BHMA A156.31 - Standards for Hardware and Specialties
 2. ANSI/BHMA A156.28 - Recommended Practices for Keying Systems

1.03 SUBMITTALS

A. General:

1. Submit in accordance with Conditions of Contract and Division 01 Submittal Procedures.
2. Prior to forwarding submittal:
 - a. Comply with procedures for verifying existing door and frame compatibility for new hardware, as specified in PART 3, “EXAMINATION” article, herein.
 - b. Review drawings and Sections from related trades to verify compatibility with specified hardware.
 - c. Highlight, encircle, or otherwise specifically identify on submittals: deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.
3. Door Hardware Schedule:
 - a. Submit concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work critical in Project construction schedule.
 - b. Submit under direct supervision of a Door Hardware Institute (DHI) certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule published by DHI.
 - c. Indicate complete designations of each item required for each opening, include:
 - 1) Door Index: door number, heading number, and Architect’s hardware set number.
 - 2) Quantity, type, style, function, size, and finish of each hardware item.
 - 3) Name and manufacturer of each item.
 - 4) Fastenings and other pertinent information.
 - 5) Location of each hardware set cross-referenced to indications on Drawings.
 - 6) Explanation of all abbreviations, symbols, and codes contained in schedule.
 - 7) Mounting locations for hardware.
 - 8) Door and frame sizes and materials.
 - 9) Degree of door swing and handing.
 - 10) Operational Description of openings with electrified hardware covering egress, ingress (access), and fire/smoke alarm connections.
4. Key Schedule:
 - a. After Keying Conference, provide keying schedule that includes levels of keying, explanations of key system's function, key symbols used, and door numbers controlled.
 - b. Use ANSI/BHMA A156.28 “Recommended Practices for Keying Systems” as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
 - c. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations.
 - d. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.

- e. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion. Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.
 - f. Prepare key schedule by or under supervision of supplier, detailing Owner's final keying instructions for locks.
- 5. Templates: After final approval of hardware schedule, provide templates for doors, frames and other work specified to be factory or shop prepared for door hardware installation.
- B. Closeout Submittals:
 - 1. Operations and Maintenance Data: Provide in accordance with Division 01 and include:
 - a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
 - b. Catalog pages for each product.
 - c. Factory order acknowledgement numbers (for warranty and service)
 - d. Name, address, and phone number of local representative for each manufacturer.
 - e. Parts list for each product.
 - f. Final approved hardware schedule edited to reflect conditions as-installed.
 - g. Final keying schedule
 - h. Copies of floor plans with keying nomenclature
 - i. Copy of warranties including appropriate reference numbers for manufacturers to identify project.
 - j. As-installed wiring diagrams for each opening connected to power, both low voltage and 110 volts.

1.04 QUALITY ASSURANCE

- A. Qualifications and Responsibilities:
 - 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 and that provides certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.
 - a. Warehousing Facilities: In Project's vicinity.
 - b. Scheduling Responsibility: Preparation of door hardware and keying schedules.
 - c. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
 - d. Coordination Responsibility: Assist in coordinating installation of electronic security hardware with Architect and electrical engineers and provide installation and technical data to Architect and other related subcontractors.
 - 1) Upon completion of electronic security hardware installation, inspect and verify that all components are working properly.
 - 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.
 - 3. Architectural Hardware Consultant: Person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and meets these requirements:
 - a. For door hardware: DHI certified AHC or DHC.
 - b. Can provide installation and technical data to Architect and other related subcontractors.
 - c. Can inspect and verify components are in working order upon completion of installation.
 - d. Capable of producing wiring diagram and coordinating installation of electrified hardware with Architect and electrical engineers.
 - 4. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.

B. Certifications:

1. Fire-Rated Door Openings:

- a. Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction.
- b. Provide only items of door hardware that are listed products tested by Underwriters Laboratories, Intertek Testing Services, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of doors indicated, based on testing at positive pressure and according to NFPA 252 or UL 10C and in compliance with requirements of fire-rated door and door frame labels.

2. Smoke and Draft Control Door Assemblies:

- a. Provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105
- b. Comply with the maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at tested pressure differential of 0.3-inch wg (75 Pa) of water.

3. Electrified Door Hardware

- a. Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction.

4. Accessibility Requirements:

- a. Comply with governing accessibility regulations cited in "REFERENCES" article, herein for door hardware on doors in an accessible route.

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.
- B. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package. Deliver each article of hardware in manufacturer's original packaging.
- C. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.
- D. Provide secure lock-up for door hardware delivered to Project. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.
- E. 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.
- F. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

1.06 COORDINATION

- A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete.
- B. 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.

1.07 WARRANTY

- A. Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within published warranty period.
 1. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.
 2. Warranty Period: Beginning from date of Substantial Completion, for durations indicated in manufacturer's published listings.

- a. Falcon
 - 1) Lock: 10 year mechanical

1.08 MAINTENANCE

- A. Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.
- B. Turn over unused materials to Owner for maintenance purposes.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Approval of manufacturers and/or products other than those listed as “Scheduled Manufacturer” or “Acceptable Manufacturers” in the individual article for the product category shall be in accordance with QUALITY ASSURANCE article, herein.
- B. Approval of products from manufacturers indicated in “Acceptable Manufacturers” is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer’s product.
- C. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

2.02 CYLINDRICAL LOCKS – GRADE 1

- A. Manufacturers and Products:
 - 1. Scheduled Manufacturer and Product: Schlage ND Series
 - 2. Acceptable Manufacturers and Products: **NONE – OWNER’S STANDARD**
- B. Requirements:
 - 1. Provide Schlage ND Series cylindrical locks conforming to the following standards and requirements:
 - a. ANSI/BHMA A156.2 Series 4000, Grade 1.
 - b. UL 10C for 4’-0” x 10’-0” 3-hour fire door.
 - c. Florida Building Code (ASTM E330, E1886, E1996) and Miami Dade (TAS 201, 202, 203) requirements for hurricanes.
 - 2. Cylinders: Refer to “KEYING” article, herein.
 - 3. Provide cylindrical locksets exceeding the ANSI/BHMA A156.2 Grade 1 performance standards for strength, security, and durability in the categories below:
 - a. Abusive Locked Lever Torque Test – minimum 3,100 inch-pounds without gaining access
 - b. Offset lever pull – minimum 1,600 foot pounds without gaining access
 - c. Vertical lever impact – minimum 100 impacts without gaining access
 - d. Cycle life - tested to minimum 16 million cycles per ANSI/BHMA A156.2 Cycle Test with no visible lever sag or use of performance aids such as set screws or spacers.
 - 4. Provide levers with vandal resistant technology for use at heavy traffic or abusive applications.
 - 5. Provide cylindrical locks with an inside indicator feature on a 626 finish for the Rhodes and Omega rose designs that provides clear direction for users to safely and quickly secure the room.
 - 6. Provide solid steel anti-rotation through bolts and posts to control excessive rotation of lever.
 - 7. Provide lockset that allows lock function to be changed to over twenty other common functions by swapping easily accessible parts.
 - 8. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2 inch latch throw capable of UL listing of 3 hours on a 4’ x 10’ opening. Provide proper latch throw for UL listing at pairs.
 - 9. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.

10. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
11. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
12. Lever Trim: Solid cast levers without plastic inserts, and wrought roses on both sides.
 - a. Lever Design: Schlage Rhodes.

2.03 CYLINDRICAL LOCKS – GRADE 2

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Falcon W series (**FAL**).
2. Acceptable Manufacturers and Products: **NONE – OWNER’S STANDARD**

B. Requirements:

1. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 2, and UL Listed for 3 hour fire doors.
2. Cylinders: Refer to “KEYING” article, herein.
3. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2 inch latch throw. Provide proper latch throw for UL listing at pairs.
4. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
5. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
6. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
7. Lever Trim: Solid cast levers without plastic inserts and wrought roses on both sides.
 - a. Lever Design: Falcon – **As Listed in Hardware sets.**

2.04 DEADBOLTS

1. Manufacturers and Products:

- a. Scheduled Manufacturer and Product: Schlage B500 series
- b. Acceptable Manufacturers and Products: **NONE – OWNER’S STANDARD**

2. Requirements:

- a. Provide deadbolt series conforming to ANSI/BHMA A156 and function as specified. Cylinders: Refer to “KEYING” article, herein.
- b. Provide deadbolts with standard 2-3/4 inches (70 mm) backset. Provide 2-3/8 inches (60 mm) where noted or if door or frame detail requires. Provide deadbolt with full 1 inch (25 mm) throw, constructed of steel alloy.
- c. Provide manufacturer’s standard strike.

2.05 CYLINDERS

A. Manufacturers and Products:

1. Scheduled Manufacturer: Falcon (**SCH**) – **Schlage Keyway 6-pin.**
2. Acceptable Manufacturers and Products: **NONE – OWNER’S STANDARD**

B. Requirements:

1. Provide cylinders/cores, compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset, manufacturer’s series as indicated. Refer to “KEYING” article, herein.

C. Construction Keying:

2.06 KEYING

- #### **A. Provide a factory registered keying system, complying with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.**

B. Requirements:

1. Provide permanent cylinders/cores keyed by the manufacturer according to the following key system.
 - a. Master Keying system as directed by the Owner.

2. Forward bitting list and keys separately from cylinders, by means as directed by Owner. Failure to comply with forwarding requirements will be cause for replacement of cylinders/cores involved at no additional cost to Owner.
3. Provide keys with the following features:
 - a. Material: Nickel silver; minimum thickness of .107-inch (2.3mm)
4. Identification:
 - a. Mark permanent cylinders/cores and keys with applicable blind code per DHI publication "Keying Systems and Nomenclature" for identification. Do not provide blind code marks with actual key cuts.
 - b. Identification stamping provisions must be approved by the Owner.
 - c. Stamp cylinders/cores and keys with Owner's unique key system facility code as established by the manufacturer; key symbol and embossed or stamped with "DO NOT DUPLICATE".
 - d. Failure to comply with stamping requirements will be cause for replacement of keys involved at no additional cost to Owner.
 - e. Forward permanent cylinders/cores to Owner, separately from keys, by means as directed by Owner.
5. Quantity: Furnish in the following quantities.
 - a. Change (Day) Keys: 3 per cylinder/core.
 - b. Master Keys: 6.

2.07 DOOR VIEWERS

- A. Manufacturers:
 1. Scheduled Manufacturer: Ives (**IVE**).
 2. Acceptable Manufacturers: Burns, Rockwood.
- B. Provide appropriate door viewer for door type and rating with minimum of 180-degree view area.

2.08 BI-FOLD DOOR HARDWARE

- A. Manufacturer:
 1. Scheduled Manufacturer: Johnson (**JOH**).
 2. Acceptable Manufacturers: Hager, Stanley, KN Crowder.
- B. Requirements:
 1. Provide complete sets of bi-fold door hardware as recommended by manufacturer for door type and weight.
 - a. Include track, hangers, fasteners, guides, and other hardware as required for complete installation.

2.09 FINISHES

- A. Finish: BHMA 626/652 (US26D); except:
 1. Wall Stops: BHMA 630 (US32D)

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.
- B. 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:

1. Carefully remove existing door hardware and components being reused. Clean, protect, tag, and store in accordance with storage and handling requirements specified herein.
2. Field modify and prepare existing doors and frames for new hardware being installed.
3. When modifications are exposed to view, use concealed fasteners, when possible.
4. Prepare hardware locations and reinstall in accordance with installation requirements for new door hardware and with:
 - a. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.
 - b. Wood Doors: DHI WDHS.5 "Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors."
 - c. 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. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
- B. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.
- C. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.
- D. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.
- E. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- F. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.
- G. Lock Cylinders:
 1. Install construction cores to secure building and areas during construction period.
 2. Replace construction cores with permanent cores as indicated in keying section.
 3. Furnish permanent cores to Owner for installation.
- H. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.

3.04 FIELD QUALITY CONTROL

- A. Engage qualified, independent, Door Hardware Institute (DHI) Certified, Fire Door Assembly Inspector (CFDAI) or Architectural Hardware Consultant (AHC) to perform inspections, prepare inspection reports, and issue inspection reports.
 1. Representative will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.
 2. Representative will inspect fire rated doors and state in report whether installed work complies with NFPA 80.

3.05 ADJUSTING

- A. Initial Adjustment: 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.

3.06 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items per manufacturer's instructions to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.





3.07 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. 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.
- C. Hardware items are referenced in the following hardware schedule. Refer to the above-specifications for special features, options, cylinders/keying, and other requirements.
- D. Hardware Sets:

ALL DOORS ARE TYPICAL – SEE PLANS FOR QTY'S

HARDWARE SET: 01 – UNIT ENTRY / PORCH

EACH TO HAVE:



1	EA	ENTRANCE LOCK	ND92P6D RHO 14-048		626	SCH
1	EA	SGL CYL DEADBOLT	B560P		626	SCH
1	EA	STOP	WS407CCV / FS436 / 450S - AS REQ'D		630	IVE
1	EA	DOOR VIEWER	698		626	IVE

BALANCE OF HARDWARE BY PRE-HUNG DOOR MANUFACTURER

2EA VIEWERS AT ACCESSIBLE UNITS

HARDWARE SET: 02 – BEDROOM / BATHROOM



EACH TO HAVE:

1	EA	PRIVACY LOCK	W301S DAN 30-208 30-150		626	FAL
1	EA	DOOR STOP	63 OR 70 AS REQ'D		F626E	IVE

BALANCE OF HARDWARE BY PRE-HUNG DOOR MANUFACTURER

HARDWARE SET: 03 – LINEN / CLOSET / HVAC

EACH TO HAVE:

1	EA	PASSAGE SET	W101S DAN 30-208 30-150		626	FAL
1	EA	DOOR STOP	63 OR 70 AS REQ'D		F626E	IVE

BALANCE OF HARDWARE BY PRE-HUNG DOOR MANUFACTURER

MESA HEIGHTS TEACHERAGE SUBDIVISION - PHASE I
CENTRAL CONSOLIDATED SCHOOL DISTRICT

5417.02

HARDWARE SET: 04 – BI-FOLD - CLOSET

EACH TO HAVE:

1 EA BIFOLD TRACK & HDW 200FD
KIT

JOH

PROVIDE ADA PULLS AT ACCESSIBLE UNITS

END OF SECTION

SECTION 09 05 61

COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This section applies to floors identified in Contract Documents that are receiving the following types of floor coverings:
 - 1. Resilient tile and sheet.
 - 2. Thin-set ceramic tile.
- B. Preparation of new concrete floor slabs for installation of floor coverings.
- C. Testing of concrete floor slabs for moisture and alkalinity (pH).
- D. Remediation of concrete floor slabs due to unsatisfactory moisture or alkalinity (pH) conditions.
 - 1. General Contractor shall perform all specified remediation of concrete floor slabs. If such remediation is indicated by testing agency's report and is due to a condition not under General Contractor's control or could not have been predicted by examination prior to entering into the contract, a contract modification will be issued.

1.02 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Moisture emission reducing curing and sealing compound for slabs to receive adhered flooring, to prevent moisture content-related flooring failures; to remain in place, not to be removed.
- B. Section 03 30 00 - Cast-in-Place Concrete: Concrete admixture for slabs to receive adhered flooring, to prevent moisture content-related flooring failures.
- C. Section 03 30 00 - Cast-in-Place Concrete: Limitations on curing requirements for new concrete floor slabs.

1.03 REFERENCE STANDARDS

- A. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.
- B. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2011.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least 24 hours prior to testing.

1.05 SUBMITTALS

- A. Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:
 - 1. Moisture and alkalinity (pH) limits and test methods.
 - 2. Manufacturer's required bond/compatibility test procedure.
- B. Testing Agency's Report:
 - 1. Description of areas tested; include floor plans and photographs if helpful.
 - 2. Summary of conditions encountered.
 - 3. Moisture and alkalinity (pH) test reports.
 - 4. Copies of specified test methods.
 - 5. Recommendations for remediation of unsatisfactory surfaces.
 - 6. Submit report to Architect.
 - 7. Submit report not more than two business days after conclusion of testing.
- C. Adhesive Bond and Compatibility Test Report.

1.06 QUALITY ASSURANCE

- A. Moisture and alkalinity (pH) testing shall be performed by an independent testing agency employed and paid by General Contractor.

- B. Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.
 - 1. Submit evidence of experience consisting of at least 3 test reports of the type required, with project Owner's project contact information.
- C. General Contractor's Responsibility Relating to Independent Agency Testing:
 - 1. Provide access for and cooperate with testing agency.
 - 2. Confirm date of start of testing at least 10 days prior to actual start.
 - 3. Allow at least 4 business days on site for testing agency activities.
 - 4. Achieve and maintain specified ambient conditions.
 - 5. Notify Architect when specified ambient conditions have been achieved and when testing will start.

1.07 FIELD CONDITIONS

- A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F (18 degrees C) or more than 85 degrees F (30 degrees C).
- B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

PART 2 PRODUCTS

PART 3 EXECUTION

3.01 CONCRETE SLAB PREPARATION

- A. Perform following operations in the order indicated:
 - 1. Preliminary cleaning.
 - 2. Moisture vapor emission tests; 3 tests in the first 1000 square feet (100 square meters) and _____ in each additional _____ square feet (_____ square meters), unless otherwise indicated or required by flooring manufacturer.
 - 3. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
 - 4. Alkalinity (pH) tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
 - 5. Specified remediation, if required.
 - 6. Patching, smoothing, and leveling, as required.
 - 7. Other preparation specified.
 - 8. Adhesive bond and compatibility test.
 - 9. Protection.

3.02 MOISTURE VAPOR EMISSION TESTING

- A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
- B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.
- C. Test in accordance with ASTM F1869 and as follows.
- D. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.
- E. In the event that test values exceed floor covering manufacturer's limits, perform remediation to be determined as required. In the absence of manufacturer limits, perform remediation if test values exceed 3 pounds per 1000 square feet (1.4 kg per 93 square meters) per 24 hours.
- F. Report: Report the information required by the test method.

3.03 ALKALINITY TESTING

- A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
- B. The following procedure is the equivalent of that described in ASTM F710, repeated here for the General Contractor's convenience.
- C. Use a wide range alkalinity (pH) test paper, its associated chart, and distilled or deionized water.

- D. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 inch (25 mm) in diameter. Allow the puddle to set for approximately 60 seconds, then dip the alkalinity (pH) test paper into the water, remove it, and compare immediately to chart to determine alkalinity (pH) reading.
- E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if alkalinity (pH) test value is over 10.

3.04 PREPARATION

- A. See individual floor covering section(s) for additional requirements.
- B. Comply with requirements and recommendations of floor covering manufacturer.
- C. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.
- D. Do not fill expansion joints, isolation joints, or other moving joints.

3.05 ADHESIVE BOND AND COMPATIBILITY TESTING

- A. Comply with requirements and recommendations of floor covering manufacturer.

3.06 PROTECTION

- A. Cover prepared floors with building paper or other durable covering.

END OF SECTION

SECTION 09 21 16
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Performance criteria for gypsum board assemblies.
- B. Acoustic insulation.
- C. Cementitious backing board.
- D. Gypsum wallboard.
- E. Joint treatment and accessories.
- F. Textured finish system.
- G. Water-resistive barrier over exterior wall sheathing.

1.02 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 06 10 00 - Rough Carpentry: Building framing and sheathing.
- C. Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.
- D. Section 07 21 00 - Thermal Insulation: Acoustic insulation.
- E. Section 07 24 00 - Exterior Insulation and Finish Systems: Water-resistive barrier over sheathing.
- F. Section 07 92 00 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.
- G. Section 09 30 00 - Tiling: Tile backing board.
- H. Section 31 31 16 - Termite Control: Field-applied termiticide and mildewcide for metal framing.

1.03 REFERENCE STANDARDS

- A. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2010 (Reaffirmed 2016).
- B. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 1999 (Reaffirmed 2016).
- C. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2015.
- D. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2013.
- E. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2014.
- F. ASTM C1047 - Standard Specification for Accessories For Gypsum Wallboard and Gypsum Veneer Base; 2014a.
- G. ASTM C1178/C1178M - Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel; 2013.
- H. ASTM C1325 - Specification for Non-Asbestos Fiber-Mat Reinforced Cementitious Backer Units; 2014.
- I. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2014.
- J. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2012.
- K. ASTM E72 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction; 2010.
- L. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- M. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009.

- N. ASTM E413 - Classification for Rating Sound Insulation; 2010.
- O. GA-216 - Application and Finishing of Gypsum Board; 2013.
- P. GA-600 - Fire Resistance Design Manual; 2015.
- Q. ICC (IBC) - International Building Code; 2015.
- R. ISO 16000-23 - Indoor Air – Part 23: Performance Test for Evaluating the Reduction of Formaldehyde Concentrations by Sorptive Building Materials; 2009.
- S. UL (FRD) - Fire Resistance Directory; current edition.
- T. UL (FRD) - Fire Resistance Directory; current edition.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data:
 - 1. Provide data on gypsum board, accessories, and joint finishing system.
- C. Test Reports: For stud framing products that do not comply with ASTM C645 or ASTM C754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.
- D. Evaluation Reports: Submit evaluation reports certified under an independent third party inspection program administered by an agency accredited by IAS to ICC-ES AC98, IAS Accreditation Criteria for Inspection Agencies.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing gypsum board installation and finishing, with minimum 5 years of experience.

1.06 DELIVERY, STORAGE AND PROTECTION

- A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.
- B. Protect metal corner beads and trim from being bent or damaged.

1.07 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
- B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.
- C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

PART 2 PRODUCTS

2.01 BOARD MATERIALS

- A. Manufacturers - Gypsum-Based Board:
 - 1. American Gypsum Company: www.americangypsum.com/#sle.
 - 2. CertainTeed Corporation: www.certainteed.com/#sle.
 - 3. Georgia-Pacific Gypsum: www.gpgypsum.com/#sle.
 - 4. Lafarge North America Inc: www.lafargenorthamerica.com.
 - 5. National Gypsum Company: www.nationalgypsum.com/#sle.
 - 6. USG Corporation: www.usg.com/#sle.
- B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
 - 1. Application: Use for vertical surfaces, ceilings, and soffits, unless otherwise indicated.
 - 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 - a. Mold-resistant board is required whenever board is being installed before the building is enclosed and conditioned.
 - b. Mold resistant board is required in wet locations.

3. Thickness:
 - a. Vertical Surfaces: 5/8 inch (16 mm).
 - b. Ceilings: 5/8 inch (16 mm).
 4. Edges: Tapered.
 5. Paper-Faced Products:
 - a. American Gypsum; EagleRoc Regular Gypsum Wallboard and FireBloc Type X Gypsum Wallboard.
 - b. CertainTeed Corporation; Type X or Type C Gypsum Board.
 - c. Georgia-Pacific Gypsum; ToughRock.
 - d. Lafarge North America Inc; Regular Drywall and Firecheck Type X and Type C.
 - e. National Gypsum Company; Gold Bond Brand Gypsum Wallboard.
 - f. USG Corporation; Sheetrock Brand Gypsum Panels.
 - g. Substitutions: See Section 01 60 00 - Product Requirements.
 6. Mold Resistant Paper Faced Products:
 - a. American Gypsum Company; M-Bloc Type X.
 - b. CertainTeed Corporation; M2Tech 5/8" Type C Moisture & Mold Resistant Drywall.
 - c. Georgia-Pacific Gypsum; ToughRock Mold-Guard.
 - d. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Backing Board For Tiled Areas:
1. Application: Surfaces behind tile in wet areas including tub and shower surrounds and shower ceilings.
 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 3. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C1325.
 - a. Thickness: 1/2 inch (12.7 mm).
 - b. Type: Fire-resistance rated Type X, UL or WH listed.
 - c. Products:
 - 1) National Gypsum Company; PermaBase Flex Brand Cement Board.
 - 2) Substitutions: See Section 01 60 00 - Product Requirements.
- D. Exterior Sheathing Board: As specified in Section 06 10 00.

2.02 Gypsum Wallboard ACCESSORIES

- A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced. Thickness: 3.5 inch (89 mm).
- B. Water-Resistive Barrier: As specified in section 07 24 00.
- C. Finishing Accessories: ASTM C1047, galvanized steel or rolled zinc, unless noted otherwise.
 1. Types: As detailed or required for finished appearance.
 2. Special Shapes: In addition to conventional corner bead and control joints, provide U-bead at exposed panel edges.
- D. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
 1. Paper Tape: 2 inch (50 mm) wide, creased paper tape for joints and corners, except as otherwise indicated.
 2. Ready-mixed vinyl-based joint compound.
 3. Powder-type vinyl-based joint compound.
 4. Chemical hardening type compound.
- E. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inches (0.84 mm) in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion-resistant.
- F. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that project conditions are appropriate for work of this section to commence.

3.02 PREPARATION

- A. Applied Fireproofing: Before applied fireproofing materials are applied, attach offset anchor plates or ceiling runners (tracks) to surfaces indicated to receive sprayed applied fireproofing materials. Where offset anchor plates are required, provide continuous plates fastened to building structure. Do not reduce thickness of applied fireproofing materials below that required for fire-resistance ratings indicated. Protect adjacent applied fireproofing materials from damage.

3.03 GENERAL

- A. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- B. Do not bridge building expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.
- C. Install bracing at terminations in assemblies.

3.04 FRAMING INSTALLATION

- A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.
- B. Studs: Space studs as indicated in section 06 10 00.
 - 1. Extend partition framing where scheduled.
 - 2. Construct framing around plumbing fixture carriers spacing studs as necessary to fit and maintain structural integrity of the studs.
- C. Blocking: Install wood blocking for support of:
 - 1. Framed openings.
 - 2. Wall-mounted cabinets.
 - 3. Plumbing fixtures.
 - 4. Toilet accessories.
 - 5. Other required locations

3.05 ACOUSTIC ACCESSORIES INSTALLATION

- A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.
- B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
 - 1. Place one bead continuously on substrate before installation of perimeter framing members.
 - 2. Place continuous bead at perimeter of each layer of gypsum board.
 - 3. Seal around all penetrations by conduit, pipe, ducts, and rough-in boxes, except where firestopping is provided.
 - a. Apply at least 1/8 inch (3.1 mm) coating of acoustic sealant on sides and back of rough-in boxes.
 - b. Acoustic sealant work includes sealing above acoustical ceilings.
 - c. Install acoustical sealant at both faces of partitions at penetrations.

3.06 BOARD INSTALLATION

- A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
 - 1. Do not place tapered edges against cut edges or ends.
 - 2. 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 inch (1.5 mm) open space between boards. Do not force into place.
 - 3. Attach gypsum board to supplementary framing and blocking provided for additional support at openings and cutouts.
 - 4. Isolate perimeter of non-load-bearing drywall partitions at structural abutments. Provide 1/4 inch (6.3 mm) space and trim edge with L-type edge trim. Seal joints with acoustical sealant at sound-rated walls and where indicated.
 - 5. Fit board to ducts, pipes, outlets, etc., which are penetrating wallboard. Seal joints with acoustical sealant at sound-rated walls and where indicated.

- B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
 - 1. At tall and narrow walls, install boards horizontally with end joints minimal and staggered over studs to minimize joints.
- C. Double-Layer, Nonrated: Use gypsum board for first layer, placed parallel to framing or furring members, with ends and edges occurring over firm bearing. Place second layer perpendicular to framing or furring members. Offset joints of second layer from joints of first layer.
- D. Fire-Resistance-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.
- E. Cementitious Backing Board: Install over steel framing members and wood framing members where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.
- F. Ceilings: Install ceiling boards in the direction and manner which will minimize the number of end-butt joints, and which will avoid end joints in the central area of each ceiling.
- G. Installation on Framing: Use screws for attachment of all gypsum board .
 - 1. Space fasteners in gypsum boards in accordance with referenced standards and manufacturer's recommendations, except as otherwise indicated.
- H. Moisture Protection: Treat cut edges and holes in moisture resistant gypsum board with sealant.

3.07 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces or as required by specified standards.
 - 1. Not more than 30 feet (10 meters) apart on walls and ceilings over 50 feet (16 meters) long.
 - 2. At all slip tracks and other movement joints.
- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials, would otherwise be exposed or not covered with other trim.

3.08 JOINT TREATMENT

- A. Paper Faced Gypsum Board: Use paper joint tape, bedded with ready-mixed vinyl-based joint compound and finished with ready-mixed vinyl-based joint compound.
- B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
 - 1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
 - 2. Level 2: Behind cabinetry, and on backing board to receive tile finish.
 - 3. Level 1: Fire-resistance-rated wall areas above finished ceilings, whether or not accessible in the completed construction.
- C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
 - 1. Feather coats of joint compound so that camber is maximum 1/32 inch (0.8 mm).
 - 2. Taping, filling, and sanding are not required at surfaces behind adhesive applied ceramic tile and fixed cabinetry.
 - 3. Taping, filling, and sanding are not required at base layer of double-layer applications.
- D. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

3.09 TEXTURE FINISH

- A. Apply light orange peel finish texture coating by means of spraying apparatus in accordance with manufacturer's instructions and to match approved sample.

3.10 TOLERANCES

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet (3 mm in 3 m) in any direction.

3.11 PROTECTION

- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

- B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- C. Remove and replace panels that are wet, moisture damaged, and mold damaged.

END OF SECTION

SECTION 09 30 00

TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Tile for floor applications.
- B. Tile for wall applications.
- C. Cementitious backer board as tile substrate.
- D. Ceramic accessories.
- E. Non-ceramic trim.
- F. Crack Isolation Membrane.

1.02 RELATED REQUIREMENTS

- A. Section 07 92 00 - Joint Sealants: Sealing joints between tile work and adjacent construction and fixtures.
- B. Section 09 05 61 - Common Work Results for Flooring Preparation: Concrete slab moisture and alkalinity testing and remediation procedures.
- C. Section 09 21 16 - Gypsum Board Assemblies: Tile backer board.
- D. Section 09 21 16 - Gypsum Board Assemblies: Installation of tile backer board.
- E. Section 22 40 00 - Plumbing Fixtures: Shower receptor.

1.03 REFERENCE STANDARDS

- A. ANSI A108/A118/A136.1 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium); 2013.1.
 - 1. ANSI A108.1b - American National Standard Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).
 - 2. ANSI A108.2 - American National Standard General Requirements: Materials, Environmental and Workmanship; 2019.
 - 3. ANSI A108.5 - American National Standard Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).
 - 4. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 1999 (Reaffirmed 2010).
 - 5. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2010 (Reaffirmed 2016).
 - 6. ANSI A108.12 - American National Standard for Installation of Ceramic Tile with EGP (Exterior glue plywood) Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).
 - 7. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2005 (Reaffirmed 2010).
 - 8. ANSI A108.19 - American National Standard Specifications for Interior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs by the Thin-Bed Method Bonded with Modified Dry-Set Cement Mortar or Improved Modified Dry-Set Cement Mortar; 2017.
 - 9. ANSI A118.3 - American National Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive; 2013 (Revised).
 - 10. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar; 2012 (Revised).
 - 11. ANSI A118.7 - American National Standard Specifications for High Performance Cement Grouts for Tile Installation; 2010 (Revised).
 - 12. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 1999 (Reaffirmed 2016).
 - 13. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes For Thin-Set Ceramic Tile And Dimension Stone Installation; 2014.

14. ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-set Ceramic Tile and Dimension Stone Installation; 2014.
15. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2013.1.
16. ASTM C373 - Standard Test Method for Water Absorption, Bulk Density, Apparent Porosity, and Apparent Specific Gravity of Fired Whiteware Products, Ceramic Tiles, and Glass Tiles; 2014a.

B. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2015.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by affected installers.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
- C. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, setting details, and edge protection.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Master Grade Certificate: Submit for each type of tile, signed by the tile manufacturer and tile installer.
- F. Samples for Initial Selection: For each type of tile and grout indicated. Include Samples of accessories involving color selection.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 2. Extra Tile: 3 percent of each size, color, and surface finish combination.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum five years of documented experience.
- B. Installer Qualifications:
 1. Company specializing in performing tile installation, with minimum of five years of documented experience.

1.07 MOCK-UP

- A. See Section 01 40 00 - Quality Requirements, for general requirements for mock-up.
- B. Construct tile mock-up where indicated on drawings, incorporating all components specified for the location.
 1. Minimum size of mock-up is indicated on drawings.
 2. Approved mock-up may remain as part of the Work.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.09 FIELD CONDITIONS

- A. Do not install solvent-based products in an unventilated environment.
- B. Maintain ambient and substrate temperature above 50 degrees F (10 degrees C) and below 100 degrees F (38 degrees C) during installation and curing of setting materials.

PART 2 PRODUCTS

2.01 TILE

- A. Manufacturers, Ceramic Tile: All products by the same manufacturer.
 1. Dal-Tile Corporation: www.daltile.com/#sle.
 2. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Ceramic Mosaic Tile: ANSI A137.1, standard grade.

1. Moisture Absorption: 0 to 0.5 percent as tested in accordance with ASTM C373.
2. Size: 1 x 3 inch (25 by 78 mm), nominal.
3. Shape: Rectangle.
4. Edges: Square.
5. Surface Finish: Slip resistant.
6. Color(s): To be selected by Architect from manufacturer's full range.
7. Pattern: Staggered brick-joint pattern.
8. Trim Units: Matching bead, cove, and surface bullnose shapes in sizes coordinated with field tile.
9. Products:
 - a. Dal-Tile Corporation; Articulo: www.daltile.com/#sle.

C. Glazed Porcelain Floor Tile: ANSI A137.1, standard grade.

1. Moisture Absorption: 0 to 0.5 percent as tested in accordance with ASTM C373.
2. Size: 12 by 24 inch (300 by 604 mm), nominal.
3. Thickness: 5/16 inch (8 mm).
4. Surface Finish: Non-slip.
5. Color(s): To be selected by Architect from manufacturer's standard range.
6. Pattern: Staggered Brick Joint.
7. Trim Units: Matching bullnose and cove base shapes in sizes coordinated with field tile.
8. Products:
 - a. Dal-Tile Corporation; Articulo: www.daltile.com/#sle.

2.02 TRIM AND ACCESSORIES

- A. Ceramic Trim: Matching bullnose, cove base, and cove ceramic shapes in sizes coordinated with field tile.
1. Applications:
 - a. Floor to Wall Joints: Cove base.
 2. Manufacturers: Same as for tile.

2.03 EDGE PROTECTION AND TRIM

- A. Manufacturers:
1. Schluter Systems, LP.: www.schluter.com.
 2. Substitutions: See Section 01 60 00 - Product Requirements
- B. Non-Ceramic Trim:
1. Finishing and edge protection profiles in style and dimensions to suit application, for setting using tile mortar or adhesive, as as indicated on the Drawings.
 2. Acceptable Materials and Finish:
 - a. Stainless steel.
 - 1) Brushed.
 - b. Extruded Aluminum.
 - 1) Mill.
 3. Accessories:
 - a. Provide accessories in lengths and finishes to match scheduled non-ceramic trim.
 - 1) End caps.
 - 2) Corner pieces.
 - (a) Internal corners.
 - (b) External corners.
 - 3) Universal connectors.
 - (a) Transitions between two linear pieces.
 - (b) Unfinished connectors allowed only when not visible once installed.
 - b. Mitered corners and exposed cut ends will not be allowed.
 4. Where continuous linear installations exceed the standard length of non-ceramic trim, the minimum length of a single piece shall be 24 inches.
 5. Applications:
 - a. Open edges of wall tile.

- b. Open edges of floor tile.
- c. Transition between floor finishes of different heights.
- d. Transition between floor finishes of different types.
- e. Thresholds at door openings.
- f. Movement joints at floors and walls.
- g. Exposed outside corners.
- h. Exposed inside corners.
- i. Borders and other trim as indicated on drawings.
- 6. Height and length as required to match tile installation.
- 7. Install per manufacturer's installation instructions.
- 8. Submit all profiles, accessories and installation methods to Architect for review and approval in accordance with Section 01 60 00.

2.04 SETTING MATERIALS

- A. Provide setting and grout materials from same manufacturer.
- B. Latex-Portland Cement Mortar Bond Coat: ANSI A118.4.
 - 1. Applications: Use this type of bond coat where indicated and where no other type of bond coat is indicated.

2.05 ADHESIVE MATERIALS

- A. Manufacturers:
 - 1. Bonsal American, Inc: www.prospec.com
 - 2. Bostik Inc: www.bostik-us.com.
 - 3. Mapei Corporation: www.mapei.com.
 - 4. C-Cure : www.c-cure.com.
 - 5. TEC Specialty Products, Inc. : www.tecspecialty.com.
 - 6. Laticrete : www.laticrete.com.
 - 7. Custom Building Products : www.custonbuildingproducts.com.
 - 8. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4. Provide prepackaged, dry-mortar mix to which only water must be added at Project site.
- C. Mortar Bond Coat Materials for Thin-Set Installations:

2.06 GROUTS

- A. Provide setting and grout materials from same manufacturer.
- B. Manufacturers:
 - 1. Bonsal American, Inc: www.prospec.com
 - 2. Bostik Inc; ____: www.bostik-us.com/#sle.
 - 3. LATICRETE International, Inc; LATICRETE PERMACOLOR Grout: www.laticrete.com/#sle.
 - 4. Custom Building Products: www.custombuildingproducts.com.
 - 5. Mapei Corporation: www.mapei.com.
 - 6. C-Cure : www.c-cure.com.
 - 7. TEC Specialty Products, Inc. : www.tecspecialty.com.
 - 8. Merkrete : www.merkrete.com.
 - 9. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Epoxy Grout: ANSI A118.3 chemical resistant and water-cleanable epoxy grout.
 - 1. Applications: Where indicated.
 - 2. Color(s): As selected by Architect from manufacturer's full line.
 - 3. Products:
 - a. ARDEX Engineered Cements; ARDEX WA: www.ardexamericas.com/#sle.
 - b. LATICRETE International, Inc; LATICRETE SPECTRALOCK PRO Premium Grout: www.laticrete.com/#sle.

- D. Standard Grout: Polymer modified cement grout, sanded or unsanded, as specified in ANSI A118.7.
 - 1. Non-shrinking - non-expanding, non-toxic, dense, bacterial growth inhibitive, factory prepared, stain resistant, non-efflorescing, ready for mixing with water.
 - 2. Colors: To be selected by Architect from manufacturer's standard range.

2.07 Maintenance Materials

- A. Tile Sealant: Gunnable, silicone, siliconized acrylic, or urethane sealant; moisture and mildew resistant type.
 - 1. Applications: Between tile and plumbing fixtures.
 - 2. Color(s): As selected by Architect from manufacturer's full line.
 - 3. Products:
 - a. Custom Building Products; Commercial 100% Silicone Caulk: www.custombuildingproducts.com/#sle.
 - b. LATICRETE International, Inc; LATICRETE LATASIL: www.laticrete.com/#sle.
- B. Grout Sealer: Liquid-applied, moisture and stain protection for existing or new Portland cement grout.
 - 1. Composition: Water-based colorless silicone.
 - 2. Products:
 - a. Merkrete, by Parex USA, Inc; Merkrete Grout Sealer: www.merkrete.com/#sle.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.

2.08 ACCESSORY MATERIALS

- A. Waterproofing Membrane at Floors: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.
 - 1. Crack Resistance: No failure at 1/16 inch (1.6 mm) gap, minimum; comply with ANSI A118.12.
 - 2. Fluid or Trowel Applied Type:
 - a. Material: Synthetic rubber.
 - b. Thickness: 25 mils (0.6 mm), minimum, dry film thickness.
 - c. Products:
 - 1) ARDEX Engineered Cements; ARDEX 8+9: www.ardexamericas.com/#sle.
 - 2) Custom Building Products; RedGard Crack Prevention and Waterproofing Membrane: www.custombuildingproducts.com/#sle.
 - 3) LATICRETE International, Inc; LATICRETE HYDRO BAN: www.laticrete.com/#sle.
 - 4) Merkrete, by Parex USA, Inc; Merkrete Hydro Guard 2000: www.merkrete.com/#sle.
- B. Waterproofing Membrane at Showers and Tiled Tubs: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.
 - 1. Material: Fluid-applied water-based SBS rubber membrane, 40 mils (1 mm) thick, minimum, with polyester fabric reinforcing at edges, corners, joints, and cracks.
 - 2. Products:
 - a. TEC; a subsidiary of H. B. Fuller Company; HydraFlex - Waterproofing Crack Isolation Membrane: www.tecspecialty.com.
 - b. Mapei Corporation; Mapelastic AquaDefense Waterproof and Crack Isolation Membrane: www.mapei.com
- C. Backer Board: Cementitious type complying with ANSI A118.9; high density, glass fiber reinforced, 1/2 inch (12.7 mm) thick; 2 inch (51 mm) wide coated glass fiber tape for joints and corners.
 - 1. Products:
 - a. Custom Building Products; WonderBoard Lite Backerboard: www.custombuildingproducts.com/#sle.
 - b. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.
- E. Crack Isolation Membrane: Manufacturer's standard fabric applied product that complies with ANSI A118.12 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer. Width of crack isolation membrane shall be per manufacturers requirements for

the size of the tile installed. Trowel applied crack isolation membrane may be applied in special areas if approved by Architect.

1. Product: Hydro Ban Antifracture Membrane manufactured by Laticrete International, Inc.
2. Joints to Receive Membrane: Saw cuts (control joints), construction joints (cold joints) and shrinkage cracks. Per TCNA F125

F. Expansion Joints:

1. Expansion Joints: Per TCNA EJ-171 (no membrane)
2. Expansion joints shall be clear and free of all mortar and grout.
3. Expansion joint for soft joints may be caulked with a matching caulking or a pre-manufactured joint may be used. Pre-manufactured joint type and color shall be approved by Architect.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.
 1. Verify substrate floor is properly graded to drains.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.
- C. Verify that subfloor surfaces are dust free and free of substances that could impair bonding of setting materials to subfloor surfaces.
- D. Cementitious Subfloor Surfaces: Verify that substrates are ready for tiling installation by testing for moisture and alkalinity (pH).
 1. Test in accordance with Section 09 05 61.
 2. Obtain instructions if test results are not within limits recommended by tiling material manufacturer and setting material manufacturer.
 3. Follow moisture and alkalinity remediation procedures in Section 09 05 61.
- E. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- F. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

- A. Protect surrounding work from damage.
- B. Vacuum clean surfaces and damp clean.
- C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.
 1. Fill cracks, holes, and depressions in concrete substrates for tile floors with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.
- D. Install backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.
- E. Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.
- F. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, blend tiles at Project site before installing.

3.03 INSTALLATION - GENERAL

- A. Install tile and thresholds and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.19, manufacturer's instructions, and TCNA (HB) recommendations.
- B. Lay tile to pattern indicated. 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. Align floor joints.
 1. Cuts shall be made with a saw or drill without marring visible surfaces.

2. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Use crack isolation membrane at all control joints.
 1. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness and bonded securely to substrate.
 2. Do not install tile or setting materials over crack isolation membrane until membrane has cured.
 3. Floor stone as required such that membrane thickness is not broadcasted thru finished floor.
- E. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.
- F. Joints: 1/16 inch (1.58 mm) joints for ceramic tile. 1/4 inch (6.3 mm) joints for quarry tile.
- G. Form wall internal angles square and external angles bullnosed.
 1. If base matches wall tile, form base internal corners square. If base matches floor tile, form base internal angles coved (square if coved incorners are not available) and external angles bullnosed. Refer to required trim units.
- H. Install ceramic accessories rigidly in prepared openings.
- I. Install non-ceramic trim in accordance with manufacturer's instructions.
- J. Install thresholds where indicated.
- K. Sound tile after setting. Replace hollow sounding units.
- L. Keep control and expansion joints free of mortar, grout, and adhesive.
- M. Allow tile to set for a minimum of 48 hours and as required by manufacturer prior to grouting.
- N. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.
- O. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.
- P. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.
 1. Provide sealant joints between hollow metal door/window frames and tile.
 2. Provide sealant joints between architectural wood casework and tile.
- Q. Replace marred, broken or chipped units.

3.04 INSTALLATION - FLOORS - THIN-SET METHODS

- A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F113, dry-set or latex-Portland cement bond coat, with standard grout, unless otherwise indicated.
 1. Product: 253 Gold manufactured by Laticrete International, Inc.

3.05 INSTALLATION - SHOWERS AND BATHTUB WALLS AND FLOORS

- A. At bathtub walls install in accordance with TCNA (HB) Method B412, over cementitious backer units with waterproofing membrane.
- B. Install waterproofing on floors and walls to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness and bonded securely to substrate. At concrete or concrete block walls, run membrane up wall a minimum of 12 inch (304.8 mm). At cement based or glass-mat-faced sheathing install membrane over entire panel.
- C. Do not install tile or setting materials over waterproofing until waterproofing has cured and been tested to determine that it is watertight.
- D. Grout with 100% solids epoxy grout.

3.06 INSTALLATION - WALL TILE

- A. Over cementitious backer units on studs, install in accordance with TCNA (HB) Method W244, using membrane at toilet rooms.

3.07 CONTROL AND EXPANSION JOINTS

- A. Minimum joint width 3/8 inch (9.5 mm) with quarry tile and 3/16 inch (4.7 mm) with ceramic tile. Increase joint width 1/16 inch (1.58 mm) for each 4 feet (1.2 m) of spacing greater than 12 feet (3.6 m) between joints. Control or expansion joints not to exceed 24 feet (7.3 m) o.c. each way. Areas 12 feet (3.6 m) or less require no joint at edges and obstructions.
- B. Provide joint at perimeter of tile areas, in recessed beds, and at other restraints.
- C. Joint layout in tile field above joints in substrate and subject to Architect approval.
- D. Construction joints full depth of tile and setting bed.
- E. Fill joint with compressible filler as back-up for sealant.
- F. Seal joints with sealant specified in Section 07 90 05 after grout is cured, control joints thoroughly cleaned and BEFORE tile sealer is applied. Color matching grout joint color or as selected by Architect.

3.08 GROUTING

- A. Do not mix grout material with any other material except clean potable water. Mix thoroughly.
- B. When tile is locked in place work mixed joint grout (filler) into joints until joints are full. Rub in and apply second coating as recommended by manufacturer.
- C. Clean surplus from surfaces. Use manufacturer recommended if absolutely necessary. If used apply cleaner only on wetted surfaces and thoroughly rinse off all cleaner when tile work is clean.

3.09 CLEANING

- A. Clean tile and grout surfaces.

3.10 SEALING

- A. Grout to cure a minimum of 48 hours prior to sealing. Surfaces must be clean, dry and free of previously applied sealers or coatings.
- B. Apply sealer to all grout and impervious mosaic tile surfaces in accordance with manufacturer's written recommendations.

3.11 PROTECTION

- A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION

SECTION 09 65 00

RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Resilient tile flooring.
- B. Installation accessories.
- C. Refer to Drawing or Detail Sheets for floor tile patterns. Patterns will establish basis of Bid. Actual pattern(s) may be modified at time color selections are made. Colors selected may be from more than one manufacturer.
- D. Floor preparation by General Contractor.

1.02 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 03 30 00 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied resilient flooring.
- C. Section 03 54 00 - Cast Underlayment.
- D. Section 09 05 61 - Common Work Results for Flooring Preparation: Concrete slab moisture and alkalinity testing and remediation procedures.
- E. Section 26 05 26 - Grounding and Bonding for Electrical Systems: Grounding and bonding of static control flooring to building grounding system.

1.03 REFERENCE STANDARDS

- A. ASTM D6329 - Standard Guide for Developing Methodology for Evaluating the Ability of Indoor Materials to Support Microbial Growth Using Static Environmental Chambers; 1998 (Reapproved 2015).
- B. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.
- C. ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile; 2004 (Reapproved 2014).
- D. ASTM F1700 - Standard Specification for Solid Vinyl Tile; 2013a.
- E. UL 2824 - GREENGUARD Certification Program Method for Measuring Microbial Resistance From Various Sources Using Static Environmental Chambers; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
- C. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.
- D. Certification: Prior to installation of flooring, submit written certification by flooring manufacturer and adhesive manufacturer that condition of subfloor is acceptable.
- E. Manufacturer's Qualification Statement.
- F. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Extra Flooring Material: 10 square feet (_ square meters) of each type and color.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing specified flooring with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in installing specified flooring with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.
- B. Store all materials off of the floor in an acclimatized, weather-tight space.
- C. Maintain temperature in storage area between 55 degrees F (13 degrees C) and 90 degrees F (72 degrees C).
- D. Store floor tiles on flat surfaces.

1.07 FIELD CONDITIONS

- A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F (21 degrees C) to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F (13 degrees C).

PART 2 PRODUCTS

2.01 TILE FLOORING

- A. Vinyl Tile: Surface-decorated, with wear layer.
 - 1. Manufacturers:
 - a. Hallmark Floors hallmarkcommercial.com.
 - 1) 2Twelve Collection
 - 2. Minimum Requirements: Comply with ASTM F1700, of Class corresponding to type specified.
 - 3. Mold and Microbial Resistance: Highly resistant when tested in accordance with ASTM D6329; certified in accordance with UL 2824.
 - 4. VOC Content Limits: As specified in Section 01 61 16.
 - 5. Plank Tile Size: 6 by 36 inch (152 by 914 mm).
 - 6. Total Thickness: 0.100 inch (2.5 mm).
 - 7. Color: To be selected by Architect from manufacturer's full range.

2.02 ACCESSORIES

- A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.
- B. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.
 - 1. VOC Content Limits: As specified in Section 01 61 16.
- C. Adhesive for Vinyl Flooring:
- D. Moldings, Transition and Edge Strips: Rubber or vinyl.
 - 1. Install at the following locations:
 - a. Others where detailed or required.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
 - 1. Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by manufacturer.
- B. Cementitious Subfloor Surfaces: Verify that substrates are ready for resilient flooring installation by testing for moisture and alkalinity (pH).
 - 1. Test in accordance with Section 09 05 61.
 - 2. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.
- C. Verify that concrete sub-floor surfaces are dry enough and ready for resilient flooring installation by testing for moisture emission rate and alkalinity in accordance with ASTM F710; obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.

- D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

- A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.
- B. **General Contractor to prepare the sub-floor surface as follows:**
 - 1. Inspect the slab with a 10 feet (3 m) straight edge in two directions. Fill low spots greater than 3/16 inch (4.7 mm) with sub-floor filler. Remove high spots greater than 3/16 inch (4.7 mm).
 - 2. Remove subfloor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with subfloor filler to achieve smooth, flat, hard surface.
 - 3. Scrape and sand the floor with #12 grit sand paper.
 - 4. Fill holes, chips and imperfections with sub-floor filler.
 - 5. Sand the floor again.
 - 6. Skim the floor with floor patch.
 - 7. Sand the floor again.
 - 8. Fill holes, chips and imperfections with sub-floor filler.
- C. **Floor installer to prepare the sub-floor surface after the General Contractor work is complete and as follows:**
 - 1. Sand the floor.
 - 2. Fill holes, chips and imperfections with sub-floor filler.
- D. Prohibit traffic until filler is fully cured.
- E. Clean substrate.

3.03 Installation - General

- A. Starting installation constitutes acceptance of subfloor conditions.
- B. Install in accordance with manufacturer's written instructions.
- C. Adhesive-Applied Installation:
 - 1. Spread only enough adhesive to permit installation of materials before initial set.
 - 2. Place copper grounding strip in conductive adhesive and apply additional adhesive to top side of strip before installing static control flooring. Allow strip to extend beyond flooring in accordance with static control flooring manufacturer's instructions. Refer to Section 26 05 26 for grounding and bonding to building grounding system.
 - 3. Fit joints and butt seams tightly.
 - 4. Set flooring in place, press with heavy roller to attain full adhesion.
- D. Loose-Laid Installation: Set flooring in place in accordance with manufacturer's instructions.
- E. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
 - 1. Metal Strips: Attach to substrate before installation of flooring using stainless steel screws.
 - 2. Resilient Strips: Attach to substrate using adhesive.
- F. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.
- G. Install flooring in recessed floor access covers, maintaining floor pattern.
- H. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of carpet and resilient floor covering that would otherwise be exposed.

3.04 Installation - Tile Flooring

- A. Lay tiles with grain running in one direction.
- B. In-so-far as possible, use materials from one number run. If quantity of material requires more than one run, only tile from one run shall be used in any one room or area.
- C. Do not mix flooring from different runs in the same room or area.
- D. Install loose-laid tile, fit interlocking edges tightly.
- E. Install plank tile with a random offset of at least 6 inches (152 mm) from adjacent rows.

3.05 CLEANING

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean in accordance with manufacturer's written instructions.
- C. Leave areas broom clean. Waxing shall be by the Owner.

3.06 PROTECTION

- A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION

SECTION 09 91 13

EXTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints.
- C. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
 - 1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
 - 2. Exposed surfaces of steel lintels and ledge angles.
 - 3. Mechanical and Electrical:
 - a. Paint all exterior gas pipe including gas pipe on the roof.
 - b. Paint exposed, primed or bare mechanical and electrical work located outdoors and in areas subject to direct or indirect weather and/or moisture conditions; including but not limited to: ducts, gas piping, waste lines and vents, supply lines, condensate lines; electrical transformers, panels, boxes, conduit, lighting poles, standards and brackets; fire protection main and branch lines; miscellaneous hangers, brackets and metal surfaces of equipment and frames installed by others under mechanical and electrical work.
 - c. Pre-finished factory or shop prime finished devices and equipment exposed to view outdoors or inside areas other than mechanical, electrical utility or custodial rooms, shall be considered as being primed only and not as having been "Pre-Finished"; including but not limited to: access doors, roof scuttles, access ladders, irrigation control enclosures; mechanical and electrical equipment such as rooftop HVAC equipment, exhaust fans, hoods, transformers, switchgear enclosures, distribution panels or other similar cabinets, frames, doors, panels and covers. Paint or otherwise finish as scheduled or as directed by architect.
- D. Do Not Paint or Finish the Following Items:
 - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
 - 2. Unless otherwise indicated, shop priming of ferrous metal items and fabricated components are included under their respective trades.
 - 3. Finished metals such as colored anodized aluminum, stainless steel, and similar metals will not be painted.
 - 4. Items indicated to receive other finishes.
 - 5. Items indicated to remain unfinished.
 - 6. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
 - 7. Floors, unless specifically indicated.
 - 8. Glass.
 - 9. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 05 52 13 - Pipe and Tube Railings: Shop-primed items.
- C. Section 09 91 23 - Interior Painting.
- D. Section 09 93 00 - Staining and Transparent Finishing. Wood substrates.

1.03 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2014.
- C. CARB (SCM) - Suggested Control Measure for Architectural Coatings; California Air Resources Board; 2007.

- D. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition, www.paintinfo.com.
- E. SCAQMD 1113 - South Coast Air Quality Management District Rule No.1113; current edition.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on all finishing products and special coatings, including VOC content.
 - 1. For approval of substitute products, provide factory literature showing equality to specified material for Architect approval. List specified material with proposed substitute product.
- C. Samples for Initial Selection: For each type of topcoat product indicated.
 - 1. Color schedules will be furnished to Contractor, by Architect, before application of prime coats.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

1.07 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.
- D. Provide lighting level of 80 ft candles (860 lx) measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 PAINTS AND FINISHES - GENERAL

- A. Paints and Finishes: Ready mixed, unless required to be a field-catalyzed paint.
 - 1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 - 2. Supply each paint material in quantity required to complete entire project's work from a single production run.
 - 3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.
- B. Volatile Organic Compound (VOC) Content:
 - 1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
 - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
 - b. SCAQMD 1113 Rule.
 - c. CARB (SCM).
 - d. Ozone Transport Commission (OTC) Model Rule, Architectural, Industrial, and Maintenance Coatings; www.otcair.org; specifically:
 - 1) Opaque, Flat: 50 g/L, maximum.

- 2) Opaque, Nonflat: 150 g/L, maximum.
- 3) Opaque, High Gloss: 250 g/L, maximum.
- e. Architectural coatings VOC limits of New Mexico.
- 2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
- C. Flammability: Comply with applicable code for surface burning characteristics.
- D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.
- E. Colors: To be selected from manufacturer's full range of available colors.
 - 1. Selection to be made by Architect after award of contract.
 - 2. Allow for minimum of three colors for each system, unless otherwise indicated, without additional cost to Owner.

2.02 PAINT SYSTEMS - EXTERIOR

- A. Galvanized Metal and Aluminum:
 - 1. Preparation: Clean with denatured alcohol or simple green. Mineral spirits are not to be used.
 - 2. First Coat: S-W Pro Industrial Zero VOC Acrylic Semi-Gloss, B66-650 series, 0 g/L VOC.
 - 3. Final Coat: S-W Pro Industrial Zero VOC Acrylic Semi-Gloss, B66-650 series, 0 g/L VOC.
 - 4. Do not paint items with a factory finish.
- B. Wood - Siding, Trim, Shutters, Sashes, Hardboard-Bare/Primed:
 - 1. Primer Coat: S-W Exterior Latex Wood Primer, B42W8041 (4 mils wet, 1.4 mils dry).
 - 2. First Coat: S-W Pro-Industrial Zero VOC Acrylic Semi-Gloss, B66-50 Series, 0 g/L VOC.
 - 3. Final Coat: S-W Pro-Industrial Zero VOC Acrylic Semi-Gloss, B66-50 Series, 0 g/L Voc (4 mils wet, 1.5 mils dry per coat).

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin application of paints and finishes until substrates have been properly prepared.
- B. Loose dirt, foreign matter, brushed or scraped off, leaving surface clean and dry before painting.
- C. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- D. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
- E. Test shop-applied primer for compatibility with subsequent cover materials.

3.02 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

3.03 APPLICATION

- A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- B. Unless specified otherwise, apply paint with brush, spray, or roller as recommended by manufacturer to recommended thickness minimum. **Use a spray application on hollow metal doors and door/window frames or other method for a brushless look.**

- C. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- D. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.
- E. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- F. Apply each coat to uniform appearance.
 - 1. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- G. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance at no cost to Owner.
- H. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- I. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection.

3.05 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces

3.06 PROTECTION

- A. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

END OF SECTION

SECTION 09 91 23 INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints.
- C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
 - 1. General: Paint all exposed surfaces, except as otherwise indicated, whether or not colors are designated. If not designated, match adjacent painted surface; if not in a painted surface, in general match trim color.
 - 2. Access doors and panels. Paint to match adjacent surfaces unless pre-finished units are specified.
 - 3. Apply transparent finish to all exposed finish carpentry and trim including wood panels on architectural wood casework.
 - 4. Cementitious wood fiber acoustical panels.
 - 5. In finished areas, paint shop-primed items.
 - 6. Mechanical, electrical, utility and custodial spaces: Walls and ceilings or structure, as applicable, be finish painted where visible from normal level viewing. In this situation paint pipe, conduit fittings, accessories, etc., mounted at surfaces or within structure to be painted (more easily painted than masked out). Painting of ducts is not required. Painting of piping, conduit, fittings, accessories, etc., positioned away from painted surfaces (not requiring masking to prevent being painted) is not required.
 - a. When painting of mechanical, electrical, utility and custodial spaces is scheduled it is intended that the walls and ceilings or structure, as applicable, be finish painted where visible from normal level viewing. In this situation paint pipe, conduit fittings, accessories, etc., mounted at surfaces or within structure to be painted (more easily painted than masked out). Painting of ducts is not required. Painting of piping, conduit, fittings, accessories, etc., positioned away from painted surfaces (not requiring masking to prevent being painted) is not required.
 - b. Paint exposed, primed or bare mechanical and electrical work located outdoors and in areas subject to direct or indirect weather and/or moisture conditions; including but not limited to: ducts, gas piping, waste lines and vents, supply lines, condensate lines; electrical transformers, panels, boxes, conduit, lighting poles, standards and brackets; fire protection main and branch lines; miscellaneous hangers, brackets and metal surfaces of equipment and frames installed by others under mechanical and electrical work.
 - c. Pre-finished factory or shop prime finished devices and equipment exposed to view outdoors or inside areas other than mechanical, electrical utility or custodial rooms, shall be considered as being primed only and not as having been "Pre-Finished"; including but not limited to: access doors, roof scuttles, access ladders, irrigation control enclosures; mechanical and electrical equipment such as rooftop HVAC equipment, exhaust fans, hoods, transformers, switchgear enclosures, distribution panels or other similar cabinets, frames, doors, panels and covers. Paint or otherwise finish as scheduled or as directed by architect.
- D. Do Not Paint or Finish the Following Items:
 - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
 - 2. Unless otherwise indicated, shop priming of ferrous metal items and fabricated components are included under their respective trades.
 - 3. Items indicated to receive other finishes.
 - 4. Items indicated to remain unfinished.
 - 5. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
 - 6. Stainless steel, anodized aluminum, bronze, terne coated stainless steel, and lead items.
 - 7. Marble, granite, slate, and other natural stones.
 - 8. Floors, unless specifically indicated.
 - 9. Ceramic and other tiles.

10. Finished metals such as colored anodized aluminum, stainless steel, and similar metals will not be painted.
11. Brick, architectural concrete, cast stone, integrally colored plaster and stucco.
12. Glass.
13. Acoustical materials, unless specifically indicated.
14. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 05 52 13 - Pipe and Tube Railings: Shop-primed items.
- C. Section 09 91 13 - Exterior Painting.
- D. Section 09 93 00 - Staining and Transparent Finishing: Wood substrates.

1.03 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2014.
- C. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials; 2007.
- D. CARB (SCM) - Suggested Control Measure for Architectural Coatings; California Air Resources Board; 2007.
- E. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition, www.paintinfo.com.
- F. SCAQMD 1113 - South Coast Air Quality Management District Rule No.1113; current edition.
- G. SSPC V1 (PM1) - Good Painting Practice: Painting Manual, Volume 1; Fourth Edition.
- H. SSPC V2 (PM2) - Systems and Specifications: Steel Structures Painting Manual, Volume 2; Fourth Edition.
- I. SSPC-SP 1 - Solvent Cleaning; 2015.
- J. SSPC-SP 2 - Hand Tool Cleaning; 1982 (Ed. 2004).
- K. SSPC-SP 3 - Power Tool Cleaning; 1982 (Ed. 2004).

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
 2. MPI product number (e.g. MPI #47).
 3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
- C. Product Data: Provide data on all finishing products and special coatings, including VOC content.
 1. For approval of substitute products, provide factory literature showing equality to specified material for Architect approval. List specified material with proposed substitute product.
- D. Samples for Initial Selection: For each type of topcoat product indicated.
 1. Color schedules will be furnished to Contractor, by Architect, before application of prime coats.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

1.07 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Do not apply materials when relative humidity exceeds 85 percent; at temperatures less than 5 degrees F (3 degrees C) above the dew point; or to damp or wet surfaces.
- D. Minimum Application Temperatures for Paints: 50 degrees F (10 degrees C) for interiors unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80 ft candles (860 lx) measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Paints:
 - 1. Base Manufacturer: Sherwin Williams.
 - a. Paint "Series" are intended to specify type and quality of a paint line which includes white and tint bases. Contractor shall use proper base for color(s) selected including accent colors.
 - 2. Behr Process Corporation: www.behr.com/#sle.
 - 3. Dunn Edwards Paints: www.dunnedwards.com.
 - 4. Kwal Paints: www.kwalpaints.com.
- B. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PAINTS AND FINISHES - GENERAL

- A. Paints and Finishes: Ready mixed, unless intended to be a field-catalyzed paint.
 - 1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 - 2. Supply each paint material in quantity required to complete entire project's work from a single production run.
 - 3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.
- B. Volatile Organic Compound (VOC) Content:
 - 1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
 - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
 - b. SCAQMD 1113 Rule.
 - c. CARB (SCM).
 - d. Ozone Transport Commission (OTC) Model Rule, Architectural, Industrial, and Maintenance Coatings; www.otcair.org; specifically:
 - 1) Opaque, Nonflat: 150 g/L, maximum.
 - 2) Opaque, High Gloss: 250 g/L, maximum.
 - e. Architectural coatings VOC limits of New Mexico.
 - 2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
- C. Flammability: Comply with applicable code for surface burning characteristics.
- D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

- E. Colors: To be selected from manufacturer's full range of available colors.
 - 1. Selection to be made by Architect after award of contract.
 - 2. Allow for minimum of three colors for each system, unless otherwise indicated, without additional cost to Owner.

2.03 PAINT SYSTEMS - INTERIOR

- A. Ferrous Metal:
 - 1. Preparation: Remove rust, clean with denatured alcohol or simple green. No mineral spirits are to be used.
 - 2. Primer Coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66W310 Series (5-10 mils wet, 2-4 mils dry).
 - 3. First Coat: S-W Pro Industrial Zero VOC Acrylic Semi-Gloss, B66-650 Series, 0 g/L VOC.
 - 4. Final Coat: S-W Pro Industrial Zero VOC Acrylic Semi-Gloss, B66-605 Series, 0 g/L VOC (2.5 - 4 mils dry per coat).
Touch up primer (material) is specified for use on metals specified Division 05 whether topcoat is required or not.
- B. Galvanized Metal and Aluminum:
 - 1. Preparation: Wash with denatured alcohol or simple green. No mineral spirits are to be used.
 - 2. Primer Coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66W310 Series (5-10 mils wet, 2-4 mils dry).
 - 3. First Coat: S-W Pro Industrial Zero VOC Acrylic Semi-Gloss, B66-650 Series, 0 g/L VOC.
 - 4. Final Coat: S-W Pro Industrial Zero VOC Acrylic Semi-Gloss, B66-650 Series, 0 g/L VOC (2.5-4 mils dry per coat).
- C. Wood - Painted:
 - 1. Primer Coat: S-W Premium Wall and Wood Primer, B28W8111 Series (4 mils wet, 1.8 mils dry).
 - 2. First Coat: S-W Pro Industrial Zero VOC Semi-Gloss Acrylic, B66-650 Series.
 - 3. Final Coat: S-W Pro Industrial Zero VOC Semi-Gloss Acrylic, B66-650 Series (2.5-4 mils dry per coat).
- D. Wood - Stain and Varnish:
 - 1. Stain: S-W WoodClassics 250 VOC Stains.
 - 2. First Coat: S-W WoodClassics Waterborne Polyurethane Varnish, A68 Series.
 - 3. Final Coat: S-W WoodClassics Waterborne Polyurethane Varnish, A68 Series (4 mils wet, 1.0 mil dry per coat).
- E. Plaster or Drywall (Gypsum Board):
 - 1. Preparation: Brush or wipe sand finish plaster surfaces to remove lightly bonded sand particles before painting.
 - 2. Primer Coat: S-W ProMar 200 Zero VOC Primer, B28W2600, 0 g/L VOC.
 - 3. First Coat: S-W ProMar 200 Zero VOC Latex Semi-Gloss, B31-2600 Series.
 - 4. Final Coat: S-W ProMar 200 Zero VOC Latex Semi-Gloss, B31-2600 Series (4 mils wet, 1.7 mils dry per coat).

2.04 PRIMERS

- A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
 - 1. Alkali Resistant Water Based Primer; MPI #3.
 - 2. Interior Drywall Primer Sealer.

2.05 ACCESSORY MATERIALS

- A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.
- B. Patching Material: Latex filler.
- C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin application of paints and finishes until substrates have been properly prepared.
- B. Loose dirt, foreign matter, brushed or scraped off, leaving surface clean and dry before painting.
- C. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- D. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
- E. Test shop-applied primer for compatibility with subsequent cover materials.
- F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 - 1. Gypsum Wallboard: 12 percent.

3.02 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Clean dust, dirt, and debris from rooms before interior painting.
- C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- E. Seal surfaces that might cause bleed through or staining of topcoat.
- F. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.
- G. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with clear sealer.
- H. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.
 - 1. Paint top and bottom of doors same as face and edges. Paint exterior doors same inside and out with exterior paint system.

3.03 APPLICATION

- A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- B. Unless specified otherwise, apply paint with brush, spray, or roller as recommended by manufacturer to recommended thickness minimum. **Use a spray application on hollow metal doors and door/window frames or other method for a brushless look.**
- C. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- D. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- E. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
 - 1. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- F. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance at no cost to Owner.
- G. Sand wood and metal surfaces lightly between coats to achieve required finish.
- H. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- I. Wood to Receive Transparent Finishes: Tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.
- J. Cementitious Wood Fiber Panels:
 - 1. Spray, do not use brush or roller, do not get panels to wet.

2. Follow manufacturer's recommendations for application conditions and equipment

K. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection.

3.05 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces

3.06 PROTECTION

A. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

SECTION 09 93 00
STAINING AND TRANSPARENT FINISHING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of stains and transparent finishes.

1.02 RELATED REQUIREMENTS

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 08 16 00 - Molded Composite Doors.
- C. Section 09 91 13 - Exterior Painting: Stains and transparent finishes for concrete substrates.
- D. Section 09 91 23 - Interior Painting: Stains and transparent finishes for concrete substrates.

1.03 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2014.
- C. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials; 2007.
- D. CARB (SCM) - Suggested Control Measure for Architectural Coatings; California Air Resources Board; 2007.
- E. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; current edition, www.paintinfo.com.
- F. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition, www.paintinfo.com.
- G. SCAQMD 1113 - South Coast Air Quality Management District Rule No.1113; current edition.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
 - 1. Manufacturer's name, product name and/or catalog number, and general product category.
 - 2. MPI product number (e.g. MPI #33).
 - 3. Manufacturer's installation instructions.
- C. Samples: Submit two samples, illustrating selected colors and sheens for each system with specified coats cascaded. Submit on actual wood substrate to be finished, 8 by 8 inch (203 by 203 mm) in size.
- D. Certification: By manufacturer that stains and transparent finishes comply with VOC limits specified.
- E. Manufacturer's Instructions: Indicate special surface preparation procedures.
- F. Manufacturer's Qualification Statement.
- G. Applicator's Qualification Statement.
- H. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, safety data sheets (SDS), care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.
- I. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
 - 2. Extra Stain and Transparent Finish Materials: 1 gallon (4 L) of each color and type; from the same product run, store where directed.
 - 3. Label each container with color and type in addition to the manufacturer's label.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of stain or transparent finish, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Stain and Transparent Finish Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

1.07 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by manufacturer of stains and transparent finishes.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Do not apply materials when relative humidity exceeds 85 percent; at temperatures less than 5 degrees F (3 degrees C) above the dew point; or to damp or wet surfaces.
- D. Minimum Application Temperature: 50 degrees F (10 degrees C) unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80 ft candles (860 lx) measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 Stains and Transparent FINISHES - GENERAL

- A. Finishes:
 - 1. Provide finishes capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 - 2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
 - 3. Supply each finish material in quantity required to complete entire project's work from a single production run.
 - 4. Do not reduce, thin, or dilute finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.
- B. Flammability: Comply with applicable code for surface burning characteristics.
- C. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.
- D. Colors: To be selected from manufacturer's full range of available colors.
 - 1. Selection to be made by Architect after award of contract.

2.02 Interior STAIN AND TRANSPARENT FINISH SYSTEMS

- A. Finish on Wood - Doors:
 - 1. Stain: Semi-Transparent Stain for Wood, Water Based; MPI #186.
 - a. Products:
 - 1) PPG Paints Deft Interior Water-Based Wood Stain, DFT300 Series. (MPI #186)
 - 2) Substitutions: Section 01 60 00 - Product Requirements.
 - 2. Sealer: Alkyd, Sanding Sealer, Clear; MPI #102.
 - a. Products:
 - 1) PPG Paints Deft Interior Oil-Based Sanding Sealer, DFT60. (MPI #102)
 - 2) Substitutions: Section 01 60 00 - Product Requirements.

3. Top Coat(s): Clear Water Based Varnish; MPI #128, 129, or 130.
 - a. Products:
 - 1) PPG Paints Deft Interior Polyurethane Water Based Acrylic Semi-Gloss, DFT 158.
 - 2) Substitutions: Section 01 60 00 - Product Requirements.

2.03 ACCESSORY MATERIALS

- A. Accessory Materials: Cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of finished surfaces.
- B. Patching Material: Latex filler.
- C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin application of stains and finishes until substrates have been properly prepared.
- B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Wood Surfaces to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats. Prime concealed surfaces with gloss varnish reduced 25 percent with thinner.
- F. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with clear sealer.

3.03 APPLICATION

- A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- C. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
- D. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- E. Reinstall items removed prior to finishing.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection.

3.05 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.06 PROTECTION

- A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

SECTION 10 28 00
TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Residential toilet, shower, and bath accessories.
- B. Utility room accessories.
- C. Supplementary blocking and framing in the base bid for all items including Owner provided or Owner installed accessories. Coordinate locations with Architect.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00: Concealed supports for accessories, including in wall framing and plates and above ceiling framing.

1.03 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2015.
- B. ASTM A167 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip; 1999 (Reapproved 2009).
- C. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2015.
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- E. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- F. ASTM B86 - Standard Specification for Zinc and Zinc-Aluminum (ZA) Alloy Foundry and Die Castings; 2013.
- G. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium; 2011.
- H. ASTM C1036 - Standard Specification for Flat Glass; 2011.
- I. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2012.
- J. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2008 (Reapproved 2013).
- K. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with the placement of internal wall reinforcement and concealed ceiling supports to receive anchor attachments.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.
- C. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

1.06 QUALITY ASSURANCE

- A. Source Limitations: For products of same manufacturer for each type of accessory unit and for units exposed to view in the same area, unless otherwise acceptable to Architect.

1.07 WARRANTY

- A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 15 years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Residential Toilet, Shower, and Bath Accessories:
 1. Delta Faucet Company
 2. Kohler
 3. Substitutions: Section 01 60 00 - Product Requirements.

2.02 MATERIALS

- A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
 1. Grind welded joints smooth.
 2. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.
- B. Stainless Steel Sheet: ASTM A666, Type 304.
- C. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.
- D. Mirror Glass: Tempered safety glass, ASTM C1048; and ASTM C1036 Type I, Class 1, Quality Q2, with silvering as required.
- E. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.

2.03 FINISHES

- A. Stainless Steel: Satin finish, unless otherwise noted.
- B. Chrome/Nickel Plating: ASTM B456, SC 2, satin finish, unless otherwise noted.
- C. Baked Enamel: Pretreat to clean condition, apply one coat primer and minimum two coats epoxy baked enamel.
- D. Back paint components where contact is made with building finishes to prevent electrolysis.

2.04 Residential Toilet, Shower, and Bath Accessories

- A. Medicine Cabinet: Stainless steel or aluminum cabinet, shelves, door, hinge, and mirror frame, reversible type, fully recessed.
 1. Shelves: Adjustable, aluminum or glass; provide not less than 3 shelves.
 2. Door: Fitted with continuous piano-type hinge, shock-absorbing spring-and-rod door stop, magnetized catch, right-hand swing.
 3. Products:
 - a. Kohler Catalan 24-1/8" x 36 1/8".
 - b. Substitutions: Section 01 60 00 - Product Requirements.
- B. Toilet Paper Holder: Surface mounted, single roll, concealed attachment.
 1. Material: Stainless steel; satin finish.
 2. Products:
 - a. Delta Faucet- Woodhurst Tissue Holder.
 - b. Substitutions: Section 01 60 00 - Product Requirements.
- C. Towel Bar: Round tubular bar; round mounting posts, concealed attachment.
 1. Mounting Post Material: Stainless steel; satin finish.
 2. Bar Material: Stainless steel; satin finish.
 3. Length: 24 inches (610 mm).
 4. Products:
 - a. Delta Faucet - Woodhurst Towl Bar 24".
 - b. Substitutions: Section 01 60 00 - Product Requirements.
- D. Towel Ring: Post with hanging ring, concealed attachment.
 1. Post Material: Stainless steel; satin finish.
 2. Ring Material: To match post material.
 3. Products:

- a. Delta Faucet - Woodhurst Towel Ring.
 - b. Substitutions: Section 01 60 00 - Product Requirements.
- E. Robe Hook: Single-prong, concealed attachment.
 - 1. Material: Stainless steel; satin finish.
 - 2. Products:
 - a. Delta Faucet - Woodhurst Robe Hook.
 - b. Substitutions: Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify exact location of accessories for installation.
- C. Verify that field measurements are as indicated on drawings.
- D. See Section 06 10 00 for installation of blocking and concealed anchors in walls and ceilings.

3.02 PREPARATION

- A. Deliver inserts and rough-in frames to site for timely installation.
- B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION

- A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.
- B. Install plumb and level, securely and rigidly anchored to substrate.
- C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.
- D. Mounting Heights and Locations: As required by accessibility regulations and as indicated on drawings

3.04 PROTECTION

- A. Protect installed accessories from damage due to subsequent construction operations.

3.05 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION

SECTION 10 57 23

CLOSET AND UTILITY SHELVING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Laminated shelves associated with wire shelving.
- B. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Blocking in walls for attachment of shelving.
- B. Section 09 21 16 - Gypsum Board Assemblies: Blocking in metal stud walls for attachment of standards.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, with installation instructions.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store products under cover and elevated above grade.
- C. Store flat to prevent warpage and bending.

PART 2 PRODUCTS

2.01 SHELVING APPLICATIONS

- A. Shelf Depth: 15 inches (381 mm), unless otherwise indicated.
- B. Master Bedroom Closets:
 - 1. Not less than 24 feet (7.3 m) of shelving equipped with free sliding hanger rod; up to 12 feet (3.65 m) may be arranged double height.
- C. Other Bedroom Closets:
 - 1. Wall-to-wall shelf with free sliding hanger rod.
- D. Coat Closets:
 - 1. Wall-to-wall shelf with integral hanger rod.
- E. Linen Closets:
 - 1. Wall-to-wall shelves spaced at 13 inch (330 mm) vertically, not less than 16 inch (408 mm) deep.
- F. Storage Closets:
 - 1. Wall-to-wall storage shelves, stacked at 13 inch (330 mm) vertically, not less than 12 inch (305 mm) deep.

2.02 MATERIALS

- A. Laminated Shelves: Particleboard with thermal-fused melamine surface on top and bottom.
 - 1. Edge Finish: Hot-melt PVC edge banding, matching color.
 - 2. Substrate Thickness: 3/4 inch (19 mm), nominal.
 - 3. Color: White.
- B. Hanging Rod: Tubular steel, 1 inch (25 mm) diameter, with end caps on open ends.
 - 1. Finish: Epoxy powder coat.
 - 2. Provide corner hanging rods and hanging rod connectors where required.
- C. Mounting Hardware: Provide manufacturer's standard mounting hardware; include support braces, wall brackets, back clips, end clips, poles, and other accessories as required for complete and secure installation; factory finished to match shelving.
- D. Fasteners: As recommended by manufacturer for mounting substrates.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspect areas to receive shelving, to verify that spaces are properly prepared to receive shelf units, and are of dimensions indicated on shop drawings.
- B. Verify appropriate fastening hardware.
- C. Do not begin installation until substrates have been properly prepared.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 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.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions, with shelf surfaces level.
- B. Cap exposed ends of cut wires.
- C. Install back clips, end clips at side walls, and support braces at open ends. Install intermediate support braces as recommended by manufacturer.
- D. Mounting Heights:
 - 1. Single Hanging Rod Units: Install shelf at 68 inches (1727 mm) above floor.

3.04 CLEANING

- A. Clean soiled surfaces after installation.

3.05 PROTECTION

- A. Protect installed work from damage.
- B. Touch-up, repair, or replace damaged products before Substantial Completion in a manner that eliminates evidence of replacement.

END OF SECTION

SECTION 11 30 13

RESIDENTIAL APPLIANCES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Kitchen appliances.
- B. Laundry appliances.

1.02 RELATED REQUIREMENTS

- A. Section 22 10 05 - Plumbing Piping: Plumbing connections for appliances.
- B. Section 26 05 83 - Wiring Connections: Electrical connections for appliances.

1.03 REFERENCE STANDARDS

- A. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.
- B. Energy Star - Joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data indicating dimensions, capacity, furnished accessories and operating features of each piece of residential equipment specified.
 - 1. Furnish product data for appliances in time to coordinate with Architectural Wood Casework (cabinets).
- C. Product Schedule: For appliances. Use same designations indicated on Drawings.
- D. Copies of Warranties: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Source Limitations: Obtain each type of residential appliance from single manufacturer and all residential appliances from single source, as much as possible.
- C. Electric Appliances: Listed and labeled by UL (DIR) and complying with NEMA Standards (National Electrical Manufacturers Association).
- D. Gas Appliances: Bearing design certification seal of American Gas Association (AGA).

1.06 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Manufacturer's standard form in which manufacturer agrees to repair or replace residential appliances or components that fail in materials or workmanship within specified warranty period, including labor and material costs:
 - 1. Warranty Period: One year from date of Substantial Completion.

PART 2 PRODUCTS

2.01 KITCHEN APPLIANCES

- A. Provide Equipment Eligible for Energy Star Rating: Energy Star Rated.
- B. Refrigerator: Free-standing, top-mounted freezer, and frost-free.
 - 1. Capacity: Total minimum storage of 20 cubic ft (0.57 cu m); minimum 15 percent freezer capacity.
 - 2. Energy Usage: Minimum 20 percent more energy efficient than energy efficiency standards set by U.S. Department of Energy (DOE).
 - 3. Features: Include glass shelves and light in freezer compartment.
 - 4. Exterior Finish: Stainless steel.
 - 5. Basis-of-Design Product: Subject to compliance with requirements, provide refrigerator(s) as manufactured by Whirlpool; product WRT541SZD or comparable product by one of the following:

- a. Frigidaire Home Products: www.frigidaire.com/#sle.
 - b. GE Appliances: www.geappliances.com/#sle.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Range: Natural gas, free-standing, with sealed burners.
 1. Size: 30 inches (762 mm) wide.
 2. Oven: Self-cleaning with electronic ignition.
 3. Elements: Four (4).
 4. Controls: Push-to-turn knobs with electronic clock and timer.
 5. Features: Include storage drawer, oven door window, and oven light.
 6. Electric Power Supply: 240 V, 60 Hz, 1 phase, 30 A
 7. Exterior Finish: Stainless steel.
 8. Basis-of-Design Product: Subject to compliance with requirements, provide range(s) as manufactured by Whirlpool Corp; product WEG515S0F or comparable product by one of the following:
 - a. Frigidaire Home Products: www.frigidaire.com/#sle.
 - b. GE Appliances: www.geappliances.com/#sle.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Microwave: Over-the-range.
 1. Capacity: 1.9 cubic ft (.053 cu m).
 2. Power: 1920 watts.
 3. Features: Include turntable and 4 Speed Exhaust Fan.
 4. Electric Power Supply: 120 V, 60 Hz, 1 phase, 15 A
 5. Exterior Finish: Fingerprint Resistant Stainless Steel.
 6. Basis-of-Design Product: Subject to compliance with requirements, provide microwave(s) as manufactured by Whirlpool Corp; product WMH78019H or comparable product by one of the following:
 - a. Frigidaire Home Products: www.frigidaire.com/#sle.
 - b. GE Appliances: www.geappliances.com/#sle.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.
- E. Waste Disposer: Continuous feed, overload protection, direct wired, dishwasher connection, drain elbow, drain connector, and sound reduction features.
 1. Power: 1/2 HP.
 2. Capacity: Large.
 3. Height: 11 inch (280 mm).
 4. Depth: 6 5/16" inch (160 mm).
 5. Drain Outlet Diameter: 1-1/2 inch (38 mm).
 6. Controls: Wall switch.
 7. Voltage: 115 volts, 60 Hz, 7 amps.
 8. Basis-of-Design Product: Subject to compliance with requirements, provide microwave(s) as manufactured by [InSinkErator]; product [Badger 5] or comparable product by one of the following:
 - a. Substitutions: See Section 01 60 00 - Product Requirements.
- F. Dishwasher: Undercounter.
 1. Controls: Solid state electronic.
 2. Wash Levels: Two (2).
 3. Cycles: Five (5), including normal and Sani Rinse Option, Soak & Clean Cycle.
 4. Features: Include adjustable upper rack, adjustable lower rack, and quiet sound insulation.
 5. Finish: Stainless steel.
 6. Basis-of-Design Product: Subject to compliance with requirements, provide dishwasher(s) as manufactured by Whirlpool Corp; product WDT750SAH or comparable product by one of the following:
 - a. Frigidaire Home Products: www.frigidaire.com/#sle.
 - b. GE Appliances: www.geappliances.com/#sle.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 LAUNDRY APPLIANCES

- A. Provide Equipment Eligible for Energy Star Rating: Energy Star Rated.
- B. Clothes Washer: Top-loading stationary.
 - 1. Controls: Solid state electronic.
 - 2. Cycles: Include normal, delicate, and soak.
 - 3. Features: Include optional second rinse, bleach dispenser, fabric softener dispenser, self-cleaning lint filter, sound insulation, and end of cycle signal.
 - 4. Finish: Painted steel with porcelain enamel top, color white.
 - 5. Basis-of-Design Product: Subject to compliance with requirements, provide microwave(s) as manufactured by [Whirlpool Corp]; product [WTW5000D] or comparable product by one of the following:
 - a. Frigidaire Home Products: www.frigidaire.com/#sle.
 - b. GE Appliances: www.geappliances.com/#sle.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Clothes Dryer: Electric, stationary.
 - 1. Controls: Solid state electronic, with electronic moisture-sensing dry control.
 - 2. Temperature Selections: One.
 - 3. Cycles: Include normal, permanent press, knit/delicate, air only, and Wrinkle Shield.
 - 4. Features: Include interior light, reversible door, stationary rack, sound insulation, and end of cycle signal.
 - 5. Finish: Painted steel with porcelain enamel top, color white.
 - 6. Basis-of-Design Product: Subject to compliance with requirements, provide microwave(s) as manufactured by [Whirlpool Corp]; product [WED4985E] or comparable product by one of the following:
 - a. Frigidaire Home Products: www.frigidaire.com/#sle.
 - b. GE Appliances: www.geappliances.com/#sle.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify utility rough-ins are provided and correctly located.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Anchor built-in equipment in place.
 - 1. Verify that clearances are adequate for proper functioning and that rough openings are completely concealed.
- C. Coordinate Architectural Wood Casework (cabinets) with size and type of equipment provided.
- D. Freestanding Equipment: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.
- E. Range Anti-Tip Device: Install at each range according to manufacturer's written instructions.

3.03 ADJUSTING

- A. Adjust equipment to provide efficient operation.

3.04 CLEANING

- A. Remove packing materials from equipment and properly discard.
- B. Wash and clean equipment.
- C. Repair or replace damaged equipment.

END OF SECTION

SECTION 12 21 16

VERTICAL LOUVER BLINDS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Vertical louver blinds at all windows.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Concealed wood blocking for attachment of headrail brackets.
- B. Section 08 51 13 - Aluminum Windows

1.03 REFERENCE STANDARDS

- A. WCMA A100.1 - Safety of Corded Window Covering Products; Current Edition, Including All Revisions.
- B. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films; 2015.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- 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. Certification: Provide certification that product complies with WCMA A100.1.
- D. Shop Drawings: Indicate headrail location.
- E. Selection Samples: For vanes, color chips or material samples representing manufacturer's full range of available colors and patterns.
- F. Operation and Maintenance Data: Manufacturer's data on repair and replacement of vanes, chains, and other parts.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 60 00 - Product Requirements, for additional provisions.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. If blinds are delivered early and stored at the project, deliver in unopened containers; handle and store in such a manner to protect them from damage.

PART 2 PRODUCTS

2.01 BLINDS AND BLIND COMPONENTS

- A. Vertical Louver Blinds: Horizontal travel, vertical vane louver units complete with tracks, pivot and traversing mechanisms, and accessories, as follows:
 - 1. Vanes: PVC vanes of the size indicated.
 - 2. Operation: Manual.
 - 3. Mounting: Outside (face of jambs).
 - 4. Cord and Chain Operation: Comply with WCMA A100.1.
- B. Tracks: Channel tracks as required for type of operation, extruded aluminum with clear anodized finish, with end caps.
 - 1. Vane Rotation: Chain driven direct rotation by activating tilt gear within end cap assembly in turn actuating tilt rod and worm-and-spur gears in carrier trucks.
 - 2. Operating Components: Internally mounted heavy-duty extruded aluminum tilt rod, vane carriers, and other components required for proper performance and designed for smooth, quiet, trouble free operation.

3. Pivot Mechanism: Geared for synchronous 180 degrees rotation of vanes and type of operation indicated.
 4. Vane Carriers: Metal carriers with ball-bearing wheels or thermoplastic trucks, equipped with linkages or other devices to ensure positive spacing of vanes.
 5. Tilt Chain: Nickel plated brass beaded ball chain, minimum 1/8 inch (3 mm) diameter; locate at drawback side of units as indicated.
- C. PVC Vanes: Integrally colored, extruded PVC; flat, 3-1/2 inches (80mm) wide.
1. Flammability: Comply with NFPA 701.
 2. Color: As selected by Architect from manufacturer's full range of colors.
 3. Texture: As selected by Architect..
- D. Brackets and Mounting Hardware: As recommended by manufacturer for the mounting configuration and span indicated; provide manufacturer's standard L- bracket with clip for outside mounting and clip only for inside mounting.
- E. Valances: To match vane design and color.
1. Style: As selected by Architect from blind manufacturer's full selection.

2.02 FABRICATION

- A. Field measure finished openings prior to ordering or fabrication.
- B. Fabricate blinds to fit openings within specified tolerances.
1. Vertical Dimensions: Fill openings from head to sill with 1/2 inch (13 mm) space between bottom of vanes and finish floor.
 2. Horizontal Dimensions - Outside Mounting: Cover window frames, trim, and casings completely.
- C. Dimensional Tolerances: Fabricate blinds to within plus/minus 1/8 inch (3 mm) of intended dimensions.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not start installation before openings are finished and all finishes have been completed; do not install until painting is completed.
- B. Examine finished openings for deficiencies that may preclude satisfactory installation.
- C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- D. Start of installation shall be considered acceptance of substrates.
- E. Field measure finished openings prior to ordering or fabrication.

3.02 PREPARATION

- A. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- B. Coordinate the work with window installation and placement of concealed blocking to support blinds.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions using mounting style as indicated.
- B. Installation Tolerances:
1. Maximum Offset From Level: 1/16 inch (1.5 mm).
- C. Adjust blinds for smooth operation.
- D. Replace blinds that exceed specified dimensional tolerances at no extra cost to Owner.

3.04 CLEANING

- A. Clean installed work to like-new condition.

3.05 PROTECTION

- A. Protect installed products until completion of project.

- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 12 35 30

RESIDENTIAL CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Kitchen cabinets.
- B. Vanity cabinets.
- C. Casework hardware.

1.02 RELATED REQUIREMENTS

- A. Section 07 92 00 - Joint Sealants: Sealing joints between casework and countertops and adjacent walls, floors, and ceilings.
- B. Section 12 36 00 - Countertops.

1.03 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 21 00 - Allowances, for cash allowances affecting this section.
- B. Allowance includes purchase, delivery, and installation of residential casework.

1.04 REFERENCE STANDARDS

- A. ANSI A135.4 - American National Standard for Basic Hardboard; 2012.
- B. ANSI A208.1 - American National Standard for Particleboard; 2009.
- C. ANSI A208.2 - American National Standard for Medium Density Fiberboard for Interior Use; 2009.
- D. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- E. BHMA A156.9 - American National Standard for Cabinet Hardware; 2010.
- F. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; 2009.
- G. KCMA A161.1 - Performance and Construction Standard for Kitchen and Vanity Cabinets; 2012.
- H. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.
- I. KCMA (DIR) - Directory of Certified Cabinet Manufacturers; current edition, online.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide component dimensions, configurations, construction details, and joint details.
- C. Certificate: Submit Kitchen Cabinet Manufacturers Association (KCMA) certificate showing conformance with KCMA A161.1.
- D. Certificate: Submit Kitchen Cabinet Manufacturers Association (KCMA) certificate showing manufacturer has met the requirements of KCMA's Environmental Stewardship Program (ESP).
- E. Shop Drawings: Indicate casework locations, elevations, clearances required, rough-in and anchor placement dimensions and tolerances.
- F. Cabinet Finish Sample: Submit two samples of each type of finish, 2 inches by 3 inches (51 mm by 75 mm) in size, illustrating color, texture, gloss, and wood species.
- G. Cabinet Door and Drawer Sample: Of sufficient size to show cabinet style and finish, with selected hardware.
- H. Manufacturer's Qualification Statement.
- I. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

- A. Products: Cabinets complying with requirements of KCMA's Environmental Stewardship Program (ESP).

- B. Manufacturer: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

1.07 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide five year manufacturer warranty for workmanship and materials.

PART 2 PRODUCTS

2.01 Cabinets

- A. Kitchen and Vanity Cabinets: Premanufactured and factory-finished, complying with construction and testing requirements in KCMA A161.1.
- B. Cabinet Box: Framed construction.
 - 1. Side Panels: Plywood.
 - a. Exposed Side Panel Finish: Wood veneer, coordinate with cabinet door and drawer color/finish.
 - 2. Back Panel: Plywood.
 - 3. Bottom (and Top) Panel: Plywood.
 - 4. Face Frame: Solid wood.
 - 5. Interior Cabinet Finish: Wood veneer.
- C. Cabinet Door/Drawer Configuration: Partial overlay.
- D. Cabinet Doors:
 - 1. Style: Shaker Style manufactured by manufacturer.
 - 2. Solid wood frame, medium density fiberboard (MDF) center panel with wood veneer finish.
 - 3. Species: Maple.
 - 4. Stain Color: To be selected by architect from manufacturer's full range.
- E. Drawers:
 - 1. Drawer Front: To match cabinet doors in style, material, and finish.
 - 2. Interior Finish: Manufacturer's standard.
- F. Shelves: Manufacturer's standard adjustable shelves and shelf supports.
- G. Cabinet Hardware: As selected from manufacturer's standard types, styles and finishes, and as indicated below.
 - 1. Comply with BHMA A156.9.
 - 2. Hinges: Manufacturer's standard self-closing concealed hinges.
 - 3. Drawer Slides: Manufacturer's standard self-closing drawer slides.
- H. Countertops: As specified in Section 12 36 00.

2.02 MATERIALS

- A. Adhesives Used for Assembly: Comply with VOC requirements for adhesives and sealants as specified in Section 01 61 16.
- B. Wood-Based Materials:
 - 1. Solid Wood: Air-dried to 4.5 percent moisture content, then tempered to 6 percent moisture content before use.
- C. Solid Wood: Clear, dry, sound, plain sawn, selected for species grain and color, no defects.
- D. Hardwood Plywood: Veneer core; HPVA HP-1 Grade as indicated; same species as exposed solid wood, clear, compatible grain and color, no defects. Band exposed edges with solid wood of same species as veneer.
- E. Medium Density Fiberboard (MDF): Composed of cellulosic fibers and resin cured under heat and pressure; grade to suite application; complying with ANSI A208.2.

2.03 FABRICATION

- A. Shop assemble casework for delivery to site in units easily handled and to permit passage through building openings.

- B. Fabricate corners and joints without gaps.
- C. Fabricate each unit to be rigid and not dependent on adjacent units for rigidity.
- D. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

2.04 FINISHES

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify adequacy of support framing.

3.02 INSTALLATION

- A. Install casework, components and accessories in accordance with manufacturer's instructions.
- B. Use anchoring devices to suit conditions and substrate materials encountered.
- C. Set casework items plumb and square, securely anchored to building structure.
- D. Carefully scribe casework abutting other components, with maximum gaps of 1/16" inch (1.5 mm).

3.03 ADJUSTING

- A. Adjust doors, drawers, hardware, and other moving or operating parts to function smoothly.

3.04 CLEANING

- A. Clean casework, countertops, shelves, and hardware.

3.05 PROTECTION

- A. Do not permit finished casework to be exposed to continued construction activity.

END OF SECTION

SECTION 12 36 00

COUNTERTOPS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Countertops for architectural cabinet work.
- B. Sinks molded into countertops.

1.02 RELATED REQUIREMENTS

- A. Section 12 35 30 - Residential Casework.
- B. Section 22 40 00 - Plumbing Fixtures: Sinks.

1.03 REFERENCE STANDARDS

- A. ANSI A208.1 - American National Standard for Particleboard; 2009.
- B. ANSI A208.2 - American National Standard for Medium Density Fiberboard for Interior Use; 2009.
- C. ASTM D635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position; 2014.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- E. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.
- F. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.0; 2016.
- G. IAPMO Z124 - Plastic Plumbing Fixtures; 2012.
- H. AWI/AWMAC (QSI) - Quality Standard Illustrated; Architectural Woodwork Institute and Architectural Woodwork Manufacturers Association of Canada; 2005, 8th Ed., Version 2.0.
- I. ISFA 2-01 - Classification and Standards for Solid Surfacing Material; 2013.
- J. ISFA 3-01 - Classification and Standards for Quartz Surfacing Material; 2013.
- K. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.
- L. PS 1 - Structural Plywood; 2009.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- 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. Specimen warranty.
- C. Shop Drawings: Complete details of materials and installation; combine with shop drawings of cabinets and casework specified in other sections.
 - 1. Show locations for plumbing fixtures, cut outs and other items installed in countertops.
- D. Selection Samples: For each finish product specified, color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
- F. Test Reports: Chemical resistance testing, showing compliance with specified requirements.
- G. Installation Instructions: Manufacturer's installation instructions and recommendations.
- H. Maintenance Data: Manufacturer's instructions and recommendations for maintenance and repair of countertop surfaces.
- I. Woodwork Quality Standard Compliance Certificates: AWI Quality Certification Program certificates, including the QCP project registration number for casework with plastic laminate countertops.

1.05 QUALITY ASSURANCE

- A. Solid Surfacing Installer Qualifications: Company specializing in installation of the products specified in this section with minimum three years of documented experience and is certified by the manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.
- C. Do not deliver countertops until painting, wet work, grinding, and similar operations have been completed in installation areas.

1.07 FIELD 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. Building shall be enclosed, wet work shall be complete, and HVAC system shall be operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Where countertop is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before manufacturing countertop; show recorded measurements on shop drawings. Coordinate manufacturing schedule with construction progress to avoid delay of Work.
 - 1. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with manufacture of countertop without field measurements. Coordinate other construction to ensure that actual dimensions correspond to guaranteed dimensions.

PART 2 PRODUCTS

2.01 COUNTERTOPS

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. Solid Surfacing Countertops: Solid surfacing sheet or plastic resin casting over continuous substrate at bathroom vanity.
 - 1. Flat Sheet Thickness: 1/2 inch (12.8 mm), minimum.
 - 2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
 - a. Manufacturers:
 - 1) Dupont: www.corian.com/#sle.
 - 2) Formica Corporation: www.formica.com/#sle.
 - 3) Wilsonart: www.wilsonart.com/#sle.
 - b. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.
 - c. Sinks and Bowls: Integral castings; minimum 3/4 inch (19 mm) wall thickness; comply with IAPMO Z124.
 - d. Finish on Exposed Surfaces: Matte, gloss rating of 5 to 20.
 - e. Color and Pattern: As selected by Architect from manufacturer's full line.
 - 3. Exposed Edge Treatment: Built up to minimum 1" inch (25.4 mm) thick; radiused edge.
 - 4. Back and End Splashes: Same sheet material, square top; minimum 4 inches (102 mm) high.
 - a. Applied Splashes.
 - b. Provide splashes at all walls and adjacent millwork.

- C. Engineered Quartz Surfacing Countertops: Quartz surfacing over continuous substrate at kitchen and utility room countertops.
 - 1. Thickness: 1/2 inch (12 mm), minimum.
 - 2. Quartz Surfacing: Homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
 - a. Surface Burning Characteristics: Flame spread 25, maximum; smoke developed 450, maximum; when tested in accordance with ASTM E 84.
 - b. Finish on Exposed Surfaces: Polished.
 - c. Color and Pattern: To be selected from manufacturer's full line.
 - d. Manufacturers:
 - 1) Cosentino Group; Product Silestone: www.silestoneusa.com
 - 2) Caesarstone International; Product Caesarstone; www.caesarstone.com.
 - 3) Dupont USA; Product Zodiaq; www.dupont.com.
 - 4) Substitutions: See Section 01 60 00 - Product Requirements.
 - 3. Exposed Edge Treatment: Built up to minimum 1 inch (25 mm) thick; radiused edge .
 - 4. Back and End Splashes: Same sheet material, square top; minimum 4 inches (102 mm) high.
 - a. Applied Splashes.
 - b. Provide splashes at all walls and adjacent millwork.

2.02 MATERIALS

- A. Wood-Based Components:
 - 1. Wood fabricated from old growth timber is not permitted.
- B. Plywood for Supporting Substrate: PS 1 Exterior Grade, A-C veneer grade, minimum 5-ply; minimum 3/4 inch (19 mm) thick; join lengths using metal splines.
- C. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.
- D. Joint Sealant: Mildew-resistant silicone sealant, in colors matching components and as selected.
- E. Solid Surfacing Countertops:
 - 1. Conductive Tape: Manufacturer's standard aluminum foil tape, with required thickness, for use with cutouts near heat sources.
 - 2. Insulating Felt Tape: Manufacturer's standard for use with conductive tape in insulating solid surface material from adjacent heat source.

2.03 FABRICATION

- A. Fabricate laminate or wood countertops in accordance with standards governing fabrication quality that are specified in 12 35 30.
- B. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
 - 1. Join lengths of tops using best method recommended by manufacturer.
 - 2. Fabricate to overhang fronts and ends of cabinets 1 inch (25 mm) except where top butts against cabinet or wall.
 - 3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.
 - a. Manufacturer of countertop shall provide all cutouts, including mechanical and electrical service fittings and sinks.
- C. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
 - 1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
 - 2. Height: 4 inches (102 mm), unless otherwise indicated.
- D. Solid Surfacing: Fabricate tops up to 144 inches (3657 mm) long in one piece; join pieces with adhesive sealant in accordance with manufacturer's recommendations and instructions.
 - 1. Integral sinks: Shop-mount securely to countertop with adhesives, using flush configuration, as per manufacturer's instructions, and as detailed on drawings.

PART 3 EXECUTION

3.01 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.
- C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.02 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.

3.03 INSTALLATION

- A. Install vanities in accordance with manufacturer's instructions and approved shop drawings
- B. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.
 - 1. Locate field joints as shown on accepted shop drawings, factory-prepared so there is no jobsite processing of top and edge surfaces.
- C. Align solid surface countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop.
 - 1. Carefully dress joints smooth, remove surface scratches and clean entire surface.
- D. Seal joint between back/end splashes and vertical surfaces.

3.04 CLEANING

- A. Clean countertops surfaces thoroughly.

3.05 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 22 05 00
COMMON WORK RESULTS FOR PLUMBING

PART 1 GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Adjust list below to suit Project.
 - 2. Piping materials and installation instructions common to most piping systems.
 - 3. Identification for Plumbing Piping and Equipment
 - 4. Dielectric fittings.
 - 5. Mechanical sleeve seals.
 - 6. Sleeves.
 - 7. Escutcheons.
 - 8. Grout.
 - 9. Equipment installation requirements common to equipment sections.
 - 10. Supports and anchorages.
 - 11. Formed steel channel

1.2 DEFINITIONS

- A. Finished Spaces: Spaces other than plumbing and electrical equipment rooms, furred spaces, pipe chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspace, and tunnels.
- B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and plumbing equipment rooms.
- C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
- D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in chases.
- E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

1.3 SUBMITTALS

- A. Shop Drawings: Submit for piping and equipment identification list of wording, symbols, letter size, and color coding for pipe identification and valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.
- B. Product Data for Pipe and Equipment Identification: Submit for mechanical identification manufacturers catalog literature for each product required.
- C. All data for Division 22 must be submitted as a single package as the Engineer will commence review only when all data has been received. Submit shop drawings and product data in a 3-ring binder sub-tabbed and grouped to include complete submittals of related system, products, and accessories. Electronic submittals are acceptable in accordance with Paragraph D below. Engineer will commence review only when all data has been received in the format required. Incomplete submittals will be returned to sender.
- D. Electronic submittals will be reviewed when allowed by the Prime Design Professional (Architect or Other Engineer.) Electronic submittals will be reviewed provided the following conditions are met.

1. Complete submittals in pdf -format will be reviewed by CSI Specification Division
 2. All data for Division 22 must be submitted as a single package as the Engineer will commence review only when all data has been received.
 3. Submittals linked to a manufacturer's web site will not be reviewed
 4. Re-submittals must highlight changes from previous submittals.
 5. Mixed submittals (part paper and part electronic) will not be reviewed
- E. The Contractor shall determine and verify field measurements and field construction criteria for conformance with Drawings and Specifications and for conflicts with other items of Construction past or present. He shall coordinate each submittal with the requirements of the Work and of the Contract Documents and notify the Engineer in writing, at the time of the submission, of any and all deviations in the submittals from requirements of the Work and Contract Documents.
- No fabrication or work which requires submittals shall begin until submittals are returned with the Engineer's approval.
- F. Engineer's review does not constitute acceptance or responsibility for accuracy or dimensions, nor shall it relieve the Contractor from meeting any requirements of the Work and Contract Documents, nor shall it constitute approval for any deviation from the Contract Documents unless such deviations are specifically stated as such on the submittal and specifically allowed by the Engineer by specific written notification for each such variation. The Engineer's review will not relieve the Contractor from responsibility for errors or omissions in the Shop Drawings.
- G. Submit copies of materials for submittal review as required by Division 1.
- 1.4 LEED SUBMITTALS EQ Credit 4.1 Low Emitting Materials: Adhesives and Sealants
- A. Refer to Specification Section 01 81 13 for VOC limits for products that are applied on-site to interior locations (within the weatherproofing system). Provide an MSDS, cut sheet, or letter from the manufacturer for each adhesive and sealant indicating the VOC level for each product.
- 1.5 PERMITS
- A. Permits necessary for the performance of the work under this contract shall be secured and paid for by the Contractor. Final inspection by the Engineer will not be made or certificate of final payment issued until certificates of satisfactory inspection from the inspection authorities are delivered.
- 1.6 SUBSTITUTIONS
- A. Prior approval required. When required by Division 1 of the Specifications, materials and equipment in Division 22 will be reviewed for prior approval. Bidder is required to document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
- B. Basis of Design. Equipment/materials indicated in schedules and details shown on the plans form the Basis of Design for this project. Alternate equipment/materials proposed by the contractor must match the specified in dimension, configuration, weight, electrical requirements, etc. Any revision to plans necessary to accommodate the alternate equipment will be the responsibility of the contractor and be reflected in a shop drawing prepared by the contractor and approved by the Engineer.
- 1.7 TRAINING
- A. The mechanical contractor shall conduct a 4 hour minimum training session with owner designated staff to review all plumbing equipment installed under this contract. At a minimum, the session will include operation and maintenance, programming, and basic operation of the systems. Contractor

shall physically demonstrate the operation of each piece of equipment. A sign in sheet and agenda indicating a list of all equipment reviewed shall be included in the close out documents.

PART 2 PRODUCTS

2.1 PIPE, TUBE, AND FITTINGS

- A. Refer to individual Division 22 piping Sections for pipe, tube, and fitting materials and joining methods.
- B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

2.2 JOINING MATERIALS

- A. Refer to individual Division 22 piping Sections for special joining materials not listed below.
- B. Pipe-Flange Gasket Materials: ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch maximum thickness unless thickness or specific material is indicated.
- C. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.
- D. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.
- E. Brazing Filler Metals: AWS A5.8, BCuP Series or BAg1, unless otherwise indicated.
- F. Welding Filler Metals: Comply with AWS D10.12.
- G. Solvent Cements for Joining Plastic Piping:
 - 1. ABS Piping: ASTM D 2235.
 - 2. CPVC Piping: ASTM F 493.
 - 3. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.
 - 4. PVC to ABS Piping Transition: ASTM D 3138.

2.3 IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

- A. Plastic Nameplates: Laminated three-layer plastic with engraved black letters on light background color.
- B. Plastic Tags: Laminated three-layer plastic with engraved black letters on light background color, minimum 1-1/2 inches diameter.
- C. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering. Larger sizes may have maximum sheet size with spring fastener. Color and Lettering: Conform to ASME A13.1.
- D. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings. Color and Lettering: Conform to ASME A13.1.
- E. Plastic Underground Pipe Markers: Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

2.4 DIELECTRIC FITTINGS

- A. Description: Combination fitting of copper alloy and ferrous materials with threaded, solder-joint, plain, or weld-neck end connections that match piping system materials.
- B. Insulating Material: Suitable for system fluid, pressure, and temperature.
- C. Dielectric Unions: Factory-fabricated, union assembly, for 250-psig minimum working pressure at 180 deg F.
- D. Dielectric Flanges: Factory-fabricated, companion-flange assembly, for 150- or 300-psig minimum working pressure as required to suit system pressures.
- E. Dielectric Couplings: Galvanized-steel coupling with inert and noncorrosive, thermoplastic lining; threaded ends; and 300-psig minimum working pressure at 225 deg F.
- F. Dielectric Nipples: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining; plain, threaded, or grooved ends; and 300-psig minimum working pressure at 225 deg F.

2.5 MECHANICAL SLEEVE SEALS

- A. Description: Modular sealing element unit, designed for field assembly, to fill annular space between pipe and sleeve.
- B. Sealing Elements: EPDM or NBR interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
- C. Pressure Plates: Carbon steel. Include two for each sealing element.
- D. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.6 SLEEVES

- A. Galvanized-Steel Sheet: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.
- B. Steel Pipe: ASTM A 53, Type E, Grade B, Schedule 40, galvanized, plain ends.
- C. Cast Iron: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
- D. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.
 - 1. Retain subparagraph below if required.
 - 2. Underdeck Clamp: Clamping ring with set screws.
- E. Plastic sleeves in first three paragraphs below are prohibited in Return Air Plenums.
- F. Molded PVC: Permanent, with nailing flange for attaching to wooden forms.
- G. PVC Pipe: ASTM D 1785, Schedule 40.
- H. Molded PE: Reusable, PE, tapered-cup shaped, and smooth-outer surface with nailing flange for attaching to wooden forms.

2.7 ESCUTCHEONS

- A. Description: Manufactured wall and ceiling escutcheons and floor plates, with an ID to closely fit around pipe, tube, and insulation of insulated piping and an OD that completely covers opening.
- B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with polished chrome-plated finish.
- C. One-Piece, Cast-Brass Type: With set screw.
 - 1. Finish: Polished chrome-plated or rough brass.
- D. Split-Casting, Cast-Brass Type: With concealed hinge and set screw.
 - 1. Finish: Polished chrome-plated or rough brass.

2.8 GROUT

- A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.
 - 1. Characteristics: Post-hardening, volume-adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
 - 2. Design Mix: 5000-psi, 28-day compressive strength.
 - 3. Packaging: Premixed and factory packaged.

2.9 FORMED STEEL CHANNEL

- A. Manufacturers:
 - 1. Allied Tube & Conduit Corp.
 - 2. B-Line Systems.
 - 3. Unistrut Corp.
 - 4. Substitutions: Permitted.
- B. Product Description: Galvanized 12 gage thick steel. With holes 1-1/2 inches on center.

PART 3 EXECUTION

3.1 PIPING SYSTEMS - COMMON REQUIREMENTS

- A. Install piping according to the following requirements and Division 22 Sections specifying piping systems.
- B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.
- C. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.
- D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- F. Install piping to permit valve servicing.
- G. Install piping at indicated slopes.
- H. Install piping free of sags and bends.
- I. Install fittings for changes in direction and branch connections.
- J. Install piping to allow application of insulation.
- K. Select system components with pressure rating equal to or greater than system operating pressure.
- L. Install escutcheons for penetrations of walls, ceilings, and floors.
- M. Install sleeves for pipes passing through concrete and masonry walls, and concrete floor and roof slabs. Provide annular clear space between sleeve and pipe, one inch larger than pipe and scheduled insulation thickness.
- N. Aboveground, Exterior-Wall Pipe Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
 - 1. Install steel pipe for sleeves smaller than 6 inches in diameter.
 - 2. Mechanical Sleeve Seal Installation: Select type and number of sealing elements required for pipe material and size. Position pipe in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pipe and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.
- O. Verify final equipment locations for roughing-in.
- P. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.
- Q. Label all piping with fluid type and flow direction. Locate labels within each room. Locate labels so they are readable from an access panel.

3.2 PIPING JOINT CONSTRUCTION

- A. Join pipe and fittings according to the following requirements and Division 22 Sections specifying piping systems.
- B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- D. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.

- E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.
- F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
 - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- G. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.
- H. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
 - 1. Comply with ASTM F 402, for safe-handling practice of cleaners, primers, and solvent cements.
 - 2. ABS Piping: Join according to ASTM D 2235 and ASTM D 2661 Appendixes.
 - 3. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.
 - 4. PVC Pressure Piping: Join schedule number ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
 - 5. PVC Nonpressure Piping: Join according to ASTM D 2855.
 - 6. PVC to ABS Nonpressure Transition Fittings: Join according to ASTM D 3138 Appendix.
- I. Plastic Pressure Piping Gasketed Joints: Join according to ASTM D 3139.
 - 1. Plastic Nonpressure Piping Gasketed Joints: Join according to ASTM D 3212.
 - 2. PE Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657.
- J. Plain-End Pipe and Fittings: Use butt fusion.
- K. Plain-End Pipe and Socket Fittings: Use socket fusion.
- L. Fiberglass Bonded Joints: Prepare pipe ends and fittings, apply adhesive, and join according to pipe manufacturer's written instructions.

3.3 PIPING CONNECTIONS

- A. Make connections according to the following, unless otherwise indicated:
 - 1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
 - 2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.
 - 3. Dry Piping Systems: Install dielectric unions and flanges to connect piping materials of dissimilar metals.
 - 4. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

3.4 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

- A. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.
- B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.

- C. Install plumbing equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.
- D. Install equipment to allow right of way for piping installed at required slope.
- E. Label all plumbing equipment including water heaters, pumps, etc. with laminated engraved nameplates.

ERECTION OF WOOD SUPPORTS AND ANCHORAGES

- F. Cut, fit, and place wood grounds, nailers, blocking, and anchorages to support, and anchor plumbing materials and equipment.
- G. Select fastener sizes that will not penetrate members if opposite side will be exposed to view or will receive finish materials. Tighten connections between members. Install fasteners without splitting wood members.
- H. Attach to substrates as required to support applied loads.

3.5 EXISTING SERVICES

- A. The Contractor shall carefully examine the drawings and specifications, visit the site of the work, fully inform himself as to all existing conditions, dimensions and limitations before starting work.
- B. If existing active or non-active services (which are not shown on plans) are encountered that require relocation or disconnection, the Contractor shall notify the Engineer for a decision on proper handling of these services. The Contractor shall not proceed with the work until so authorized.

END OF SECTION

SECTION 22 07 00
PLUMBING INSULATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Plumbing piping insulation, jackets and accessories.

1.2 SUBMITTALS

- A. Product Data: Submit product description, thermal characteristics and list of materials and thickness for each service, and location.
- B. Manufacturer's Installation Instructions: Submit manufacturers published literature indicating proper installation procedures.
- C. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.3 QUALITY ASSURANCE

- A. Test pipe insulation for maximum flame spread index of 25 and maximum smoke developed index of not exceeding 50 in accordance with ASTM E84, UL 723, or NFPA 255.
- B. Pipe insulation manufactured in accordance with ASTM C585 for inner and outer diameters.
- C. Factory fabricated fitting covers manufactured in accordance with ASTM C450.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.
- B. Protect insulation from weather and construction traffic, dirt, water, chemical, and damage, by storing in original wrapping.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Install insulation only when ambient temperature and humidity conditions are within range recommended by manufacturer.
- B. Maintain temperature before, during, and after installation for minimum period of 24 hours.

1.6 WARRANTY

- A. Furnish one year manufacturer warranty for man made fiber.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Manufacturers for Glass Fiber and Mineral Fiber Insulation Products:
 - 1. CertainTeed.
 - 2. Knauf.
 - 3. Johns Manville.
 - 4. Owens-Corning.
 - 5. Substitutions: Permitted.
- B. Manufacturers for Closed Cell Elastomeric Insulation Products:
 - 1. Aeroflex. Aerocell.
 - 2. Armacell, LLC. Armaflex.
 - 3. Nomaco. K-flex.
 - 4. Substitutions: Permitted.
- C. Manufacturers for Polyisocyanurate Foam Insulation Products:
 - 1. Dow Chemical Company.

2. Substitutions: Permitted.
 - D. Manufacturers for Extruded Polystyrene Insulation Products:
 1. Dow Chemical Company.
 2. Substitutions: Permitted.
 - 2.2 PIPE INSULATION
 - A. TYPE P-1: ASTM C547, molded glass fiber pipe insulation.
 1. Thermal Conductivity: 0.23 at 75 degrees F.
 2. Operating Temperature Range: 0 to 850 degrees F.
 3. Vapor Barrier Jacket: ASTM C1136, Type I, factory applied reinforced foil kraft with self-sealing adhesive joints.
 4. Jacket Temperature Limit: minus 20 to 150 degrees F.
 - 2.3 PIPE INSULATION JACKETS
 - A. Vapor Retarder Jacket:
 1. ASTM C921 white Kraft paper with glass fiber yarn, bonded to aluminized film.
 2. Moisture vapor transmission: ASTM E96; 0.02 perm-inches.
 - B. PVC Plastic Pipe Jacket:
 1. Product Description: ASTM D1784, One piece molded type fitting covers and sheet material, off-white color.
 2. Thickness: 15mil.
 3. Connections: Brush on welding adhesive or pressure sensitive color matching vinyl tape.
 - 2.4 PIPE INSULATION ACCESSORIES
 - A. Vapor Retarder Lap Adhesive: Compatible with insulation.
 - B. Covering Adhesive Mastic: Compatible with insulation.
 - C. Piping Shields: Galvanized steel saddle. Inserts length: not less than 6 inches long, matching thickness and contour of adjoining insulation.
 - D. Adhesives: Compatible with insulation.
- PART 3 EXECUTION
- 3.1 EXAMINATION
 - A. Verify piping has been tested before applying insulation materials.
 - B. Verify surfaces are clean and dry, with foreign material removed.
 - 3.2 INSTALLATION - PIPING SYSTEMS
 - A. Piping Exposed to View in Finished Spaces: Locate insulation and cover seams in least visible locations.
 - B. Piping Systems Conveying Fluids Below Ambient Temperature:
 1. Insulate entire system including fittings, valves, unions and expansion joints.
 2. Furnish factory-applied or field-applied vapor retarder jackets. Secure factory-applied jackets with pressure sensitive adhesive self-sealing longitudinal laps and butt strips. Secure field-applied jackets with outward clinch expanding staples and seal staple penetrations with vapor retarder mastic.
 3. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor retarder adhesive or PVC fitting covers.
 - C. Hot Piping Systems equal to or less than 140 degrees F:

1. Furnish factory-applied or field-applied standard jackets. Secure with outward clinch expanding staples or pressure sensitive adhesive system on standard factory-applied jacket and butt strips or both.
 2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.
 3. Do not insulate unions and flanges at equipment, but bevel and seal ends of insulation at such locations.
- D. Inserts and Shields:
1. Piping 1-1/2 inches Diameter and Smaller: Install galvanized steel shield between pipe hanger and insulation.
- E. Insulation Terminating Points:
1. Condensate Piping: Insulate entire piping system and components to prevent condensation..
- F. Pipe Exposed in Finished Spaces: Finish with PVC jacket and fitting covers.
- G. Buried Piping: Insulate only where insulation manufacturer recommends insulation product may be installed in trench, tunnel or direct buried. Install factory fabricated assembly with inner all-purpose service jacket with self-sealing lap, and asphalt impregnated open mesh glass fabric, with 1 mil thick aluminum foil sandwiched between three layers of bituminous compound; outer surface faced with polyester film.
- H. Heat Traced Piping Interior to Building: Insulate fittings, joints, and valves with insulation of like material, thickness, and finish as adjoining pipe. Size large enough to enclose pipe and heat tracer.
- 3.3 INSTALLATION - EQUIPMENT
- A. Factory Insulated Equipment: Do not insulate.
- B. Equipment Requiring Access for Maintenance, Repair, or Cleaning: Install insulation for easy removal and replacement without damage.

3.4 SCHEDULES

A. Water Supply Services Piping Insulation Schedule:

Domestic Hot Water Supply and Recirculation <141Deg.	P-1	1-1/4 inches and smaller	1.0
Domestic Cold Water <40deg.F.	P-1	3/4 inches and smaller 1 inches and larger	0.5 1.0

END OF SECTION

SECTION 22 10 00
PLUMBING PIPING AND PUMPS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pipe hangers and supports.
 - 2. Pipe and pipe fittings.
 - 3. Valves.
 - 4. Piping specialties.
 - 5. Plumbing drainage specialties.
 - 6. Plumbing supply specialties.

1.2 SUBMITTALS

- A. Product Data:
 - 1. Pipe Hangers and Supports: Submit manufacturers catalog data including load carrying capacity.
 - 2. Pipe and pipe fittings: Submit manufacturers catalog information with sizes, capacities, rough-in requirements, service sizes.
 - 3. Valves: Submit manufacturers catalog information with valve data and ratings for each service.
 - 4. Plumbing drainage specialties: Submit manufacturers catalog information with sizes, capacities, rough-in requirements, service sizes, and finishes.
 - 5. Plumbing supply specialties: Submit manufacturers catalog information with sizes, capacities, rough-in requirements, service sizes, and finishes.
 - 6. Pumps: Include capacities, pump curves, equipment performance, and electrical characteristics.
- B. Pipe Hangers and Supports: Design data, indicate pipe sizes, load carrying capacity of trapeze, multiple pipe, and riser support hangers.
- C. Manufacturer's Installation Instructions: Submit installation instructions for material and equipment.
- D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.3 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit spare parts lists and maintenance procedures.

1.4 QUALITY ASSURANCE

- A. Maintain one copy of each document on site.

1.5 WARRANTY

- A. Furnish one year manufacturer warranty for pumps.

PART 2 PRODUCTS

2.1 PIPE HANGERS AND SUPPORTS

- A. Manufacturers:
 - 1. Carpenter & Paterson Inc.
 - 2. DecoShield Systems Inc.
 - 3. Globe Pipe Hanger Products Inc.
 - 4. Substitutions: Permitted.

- B. Conform to ASME B31.9, ASTM F708, MSS SP 58, MSS SP 69 or MSS SP 89.
- C. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron or Carbon steel, adjustable swivel, split ring.
- D. Hangers for Pipe Sizes 2 inches and Over: Carbon steel, adjustable, clevis.
- E. Hangers for Pipe Sizes 6 inches and Over: Adjustable steel yoke, cast iron roll, double hanger.
- F. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
- G. Multiple or Trapeze Hangers for Pipe Sizes 6 inches and Over: Steel channels with welded spacers and hanger rods, cast iron roll.
- H. Wall Support for Pipe Sizes to 3 inches: Cast iron hook.
- I. Wall Support for Pipe Sizes 4 inches and Over: Welded steel bracket and wrought steel clamp.
- J. Vertical Support: Steel riser clamp.
- K. Floor Support for Pipe up to 6 inches: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
- L. Copper Pipe Support: Copper-plated, carbon-steel adjustable, ring.

2.2 PIPES AND TUBES

- A. Below grade Sanitary Sewer/Vent Piping, Buried Within 5 Feet of Building. All piping and fittings shall be marked with manufacturer's name, listing agency and size.
 - 1. Cast Iron Pipe: ASTM A74, service weight, with neoprene gaskets or lead and oakum joints.
 - 2. PVC Pipe: ASTM D2665 with PVC fittings and solvent weld joints.
 - 3. PVC Pipe: ASTM D2665 or ASTM F679 with PVC fittings and elastomeric gasket joints.
- B. Above grade Sanitary Sewer/Vent Piping, Buried Within 5 Feet of Building. All piping and fittings shall be marked with manufacturer's name, listing agency and size.
 - 1. Cast Iron Pipe: ASTM A74, service weight, with neoprene gaskets or lead and oakum joints.
 - 2. Cast Iron Pipe: CISPI 301, hubless, service weight, with neoprene gaskets and stainless steel clamps.
 - 3. PVC Pipe: ASTM D2665 with PVC fittings and solvent weld joints. Exception: piping shall not be exposed in a return air plenum.
- C. Water Piping, Buried Beyond 5 Feet of Building:
 - 1. Copper Tubing: ASTM B42, annealed without fittings.
 - 2. Ductile Iron Pipe: AWWA C151 with ductile iron fittings rubber gasket joints and 3/4 inch diameter rods.
- D. Water Entrance Piping, Buried Within 5 Feet of Building:
 - 1. Copper Tubing: ASTM B42, annealed without fittings.
 - Ductile Iron Pipe: AWWA C151 with ductile iron fittings rubber gasket joints and 3/4 inch diameter rods
- E. Cold Water Piping, Buried Below Slab:
 - 1. PEX Tubing: ASTM F877 Cross-Linked Polyethylene, ASTM F1807 for metal insert fittings, ASTM F2159 for copper crimp rings. NSF 14 & 61 compliant.
- F. Hot Water and Hot Water Return Piping, below slab:
 - 1. Pre-Insulated PEX tubing, ASTM F877 Cross-Linked Polyethylene, 1" polyethylene-foam encasement, ASHRAE 90.1-2013 energy code and NSF 14 and 61 compliant. Continuous lengths, no fittings permitted below slab.

G. Water Piping, above Grade:

1. Copper Tubing: ASTM B88, Type L, hard drawn, with cast brass or wrought copper fittings and Grade 95TA solder joints. All materials shall be certified by NSF to ANSI/NSF Standard 61 meeting US EPA Lead and Copper Rule.
2. PEX Tubing: ASTM F877 Cross-Linked Polyethylene, ASTM F1807 for metal insert fittings, ASTM F2159 for copper crimp rings. NSF 14 & 61 compliant. Rated for 200 degrees F. and 80psig working pressure.

H. Equipment Drains and Overflows:

1. Steel Pipe: ASTM A53/A53M, Grade B, Schedule 40 black steel, malleable iron or forged steel fittings, threaded or welded joints.
2. Copper Tubing: ASTM B88, Type M, hard drawn, cast brass, wrought copper fittings, lead free solder joints.
3. PVC Pipe: ASTM D1785, Schedule 40, or ASTM D2241, SDR 21 or 26, PVC fittings, solvent weld joints.

2.3 VALVES

A. Manufacturers:

1. American Valve
2. Red-White Valve Corp.
3. Milwaukee Valve
4. Substitutions: Permitted.

B. Gate Valves:

1. Up to 2 inches: Bronze body, bronze trim, non-rising stem, hand wheel, inside screw, double wedge disc, soldered or threaded.
2. Over 2 inches: Iron body, bronze trim, rising stem, hand wheel, OS&Y, solid wedge, flanged or grooved ends.

C. Ball Valves:

1. Up to 2 inches: Bronze or stainless steel one piece body, chrome plated brass ball, teflon seats and stuffing box ring, lever handle, solder or threaded ends.
2. Over 2 inches: Cast steel flanged body, chrome plated steel ball, Teflon seat and stuffing box seals and lever handle.

D. Plug Valves:

1. Up to 2 inches: Bronze body, bronze tapered plug, non-lubricated, Teflon packing, threaded ends.
2. Over 2 inches: Cast iron body and plug, pressure lubricated, Teflon packing, flanged ends.

E. Butterfly Valves:

1. Up To 2 inches: Bronze body, stainless steel disc, resilient replaceable seat, threaded ends, extended neck, 10-position lever handle.
2. Over 2 inches: Iron body, chrome plated iron disc, resilient replaceable seat, wafer or lug ends, extended neck, 10 position lever handle.

F. Swing Check Valves:

1. Up to 2 inches: Bronze body and swing disc, solder or threaded ends.
2. Over 2 inches: Iron body, bronze trim, swing disc, renewable disc and seat, flanged ends.

G. Spring Loaded Check Valves:

1. Iron body, bronze trim with threaded, wafer or flanged ends and stainless steel spring with renewable composition disc.

H. Relief Valves:

1. Bronze body, Teflon seat, stainless steel stem and springs, automatic, direct pressure actuated capacities ASME certified and labeled.

2.4 PIPING SPECIALTIES

A. Flanges, Unions, and Couplings:

1. Pipe Size 2 inches and Under: Malleable iron unions for threaded ferrous piping; bronze unions for copper pipe, soldered joints.
2. Pipe Size Over 2 inches: Forged steel flanges for ferrous piping; bronze flanges for copper piping; preformed neoprene gaskets.
3. Grooved and Shouldered Pipe End Couplings: Malleable iron housing, C-shape elastomer composition sealing gasket, steel bolts, nuts, and washers.
4. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

B. Strainers:

1. Size 2 inches and Under: Threaded brass or iron body for 175 psig working pressure, Y pattern with 1/32 inch stainless steel perforated screen.
2. Size 2-1/2 inch to 4 inch: Flanged iron body for 175 psig working pressure, Y pattern with 3/64 inch stainless steel perforated screen.
3. Size 5 inch and Larger: Flanged iron body for 175 psig working pressure, basket pattern with 1/8 inch stainless steel perforated screen.

2.5 PLUMBING DRAINAGE SPECIALTIES

A. Floor Sinks:

1. Manufacturers:
 - a. Zurn
 - b. Wade
 - c. J.R. Smith
 - d. MiFab
 - e. Watts
 - f. Substitutions: Permitted.
2. Floor Sink: Square lacquered cast iron body with integral seepage pan, epoxy coated interior, strainer, sediment bucket, nickel bronze frame and [full] [half] grate.

B. Cleanouts:

1. Manufacturers:
 - a. Zurn
 - b. Wade
 - c. J.R. Smith
 - d. MiFab
 - e. Watts
 - f. Substitutions: Permitted.
2. Finished Floor: Lacquered cast iron body with anchor flange, reversible clamping collar, and adjustable nickel-bronze round scored cover in service areas and round depressed cover to accept floor finish in finished floor areas.
3. Wall type: lacquered cast iron body and round epoxy coated gasketed cover, and round stainless steel access cover secured with machine screw.

2.6 PLUMBING SUPPLY SPECIALTIES

A. Backflow Preventers:

1. Manufacturers:
 - a. FebCo
 - b. Wilkins
 - c. Watts
 - d. Substitutions: Permitted.
2. Reduced Pressure Backflow Preventers: ASSE 1013; bronze body with bronze internal parts and stainless steel springs; two independently operating, spring loaded check valves; pressure relief valve located between check valves; third check valve opens under back pressure in case of diaphragm failure; non-threaded vent outlet; assembled with two gate valves, strainer, and four test cocks.
3. Double Check Valve Assemblies: ASSE 1012; Bronze body with corrosion resistant internal parts and stainless steel springs; two independently operating check valves with intermediate atmospheric vent.

B. Hose Bibbs/Hydrants:

1. Manufacturers:
 - a. Woodford
 - b. Zurn
 - c. Substitutions: Permitted.
2. Interior Hose Bibbs: Bronze or brass, replaceable hexagonal disc, hose thread spout, chrome plated with vacuum breaker.
3. Wall Hydrant: Non-freeze, self-draining type with chrome plated wall plate lockable recessed box hose thread spout, removable key, and vacuum breaker.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify excavations are to required grade, dry, and not over-excavate.

3.2 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt, on inside and outside piping before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.3 INSTALLATION - INSERTS

- A. Install inserts for placement in concrete forms.
- B. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
- C. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.
- D. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.

3.4 INSTALLATION - PIPING SYSTEMS

- A. Install dielectric connections wherever jointing dissimilar metals.
- B. Install unions downstream of valves and at equipment or apparatus connections.
- C. Route piping parallel to building structure and maintain gradient.
- D. Install piping to maintain headroom. Group piping to conserve space. Group piping whenever practical at common elevations.

- E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- F. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
- G. Sleeve pipe passing through partitions, walls and floors.
- H. Install piping system allowing clearance for installation of insulation and access to valves and fittings.
- I. No fittings allowed on water piping below slab.
- J. Add ½” of foam insulation on pre-insulated water piping to accommodate foam compression indirect-burial applications, or as recommended by manufacturer.
- K. Install identification on piping systems including underground piping. Refer to Section 22 05 00.
- L. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.
- M. Install all sanitary vent piping so that all portions of the vent piping will drain by gravity back to the drainage system.
- N. Install sway bracing at all changes in direction greater than 45 degrees for pipe sizes 4 inches and larger.

3.5 INSTALLATION - VALVES

- A. Install valves with stems upright or horizontal, not inverted.
- B. Install ball or butterfly valves for shut-off and to isolate equipment, part of systems, or vertical risers.
- C. Install ball valves for throttling, bypass, or manual flow control services.
- D. Provide lug end butterfly valves adjacent to equipment when functioning to isolate equipment.
- E. Install check valves on discharge of pumps.
- F. Install plug valves for throttling service. Install non-lubricated plug valves only when shut-off or isolating valves are also installed.
- G. Install ¾ inch ball drain valves at low points of piping, and at equipment. Pipe to nearest drain.
- H. Install independent ball valves at all hose bibbs.

3.6 INSTALLATION - PIPING SPECIALTIES

- A. Install pressure gauges with pulsation dampers. Provide needle valve or ball valve to isolate each gauge. Extend nipples and siphons to allow clearance from insulation.
- B. Install thermometers in piping systems in sockets in short couplings. Enlarge pipes smaller than 2-1/2 inches for installation of thermometer sockets. Allow clearance from insulation.
- C. Install gages and thermometers in locations where they are easily read from normal operating level. Install vertical to 45 degrees off vertical.
- D. Adjust gages and thermometers to final angle, clean windows and lenses, and calibrate to zero.
- E. Provide drain and hose connection with valve on strainer blow down connection.
- F. Test backflow preventers in accordance with ASSE.

3.7 INSTALLATION - PLUMBING SUPPLY PIPING

- A. Install water piping in accordance with ASME B31.9.
- B. Excavate and backfill in accordance with Section 31 20 00.
- C. Establish elevations of buried piping outside the building to 12 inches below frost line.
- D. Provide support for utility meters in accordance with requirements of utility companies.
- E. Slope water piping and arrange to drain at low points.

- F. Install piping from relief valves, back-flow preventers and drains to nearest floor drain.
- G. Install water hammer arrestors complete with accessible isolation valve on hot and cold water supply piping to washing machine outlets and flush valve assemblies.
- H. Provide water service complete with approved reduced pressure back-flow preventer and water meter with by-pass valves pressure reducing valve, and sand strainer.
- I. Install balancing valves in water circulating systems as indicated on Drawings.
- J. Disinfecting of Domestic Water Systems:
 - 1. Prior to starting, verify system is complete, flushed and clean.
 - 2. Verify pH of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).
 - 3. Inject disinfectant, free chlorine in liquid, powder and tablet or gas form, throughout system to obtain residual from 50 to 80 mg/L.
 - 4. Bleed water from outlets to obtain distribution and test for disinfectant residual at minimum 15 percent of outlets.
 - 5. Maintain disinfectant in system for 24 hours.
 - 6. When final disinfectant residual tests less than 25 mg/L, repeat treatment.
 - 7. Flush disinfectant from system until residual concentration is equal to incoming water or 1.0 mg/L.
 - 8. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWA C651.

3.8 INSTALLATION - PLUMBING DRAINAGE PIPING

- A. Install bell and spigot pipe with bell end upstream.
- B. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Install with clearance at cleanout for rodding of drainage system.
- C. Encase exterior cleanouts in concrete flush with grade.
- D. Install floor cleanouts at elevation to accommodate finished floor.
- E. Establish elevations of buried piping outside building to provide not less than 3 ft of cover.
- F. Install piping penetrating roofed areas to maintain integrity of roof assembly.
- G. Install bell and spigot pipe with bell end upstream.
- H. Establish invert elevations, slopes for drainage to 1/4 inch per foot minimum. Maintain gradients.
- I. Test drainage piping in accordance with local code requirements.

3.9 INSTALLATION - PIPE HANGERS AND SUPPORTS

- A. Support horizontal piping as scheduled.
- B. Install hangers with minimum 1/2 inch space between finished covering and adjacent work.
- C. Place hangers within 12 inches of each horizontal elbow.
- D. Use hangers with 1-1/2 inch minimum vertical adjustment.
- E. Support horizontal cast iron pipe adjacent to each hub, with 5 feet maximum spacing between hangers.
- F. Support vertical piping at every floor. Support vertical cast iron pipe at each floor at hub.
- G. Where piping is installed in parallel and at same elevation, provide multiple pipe or trapeze hangers.
- H. Support riser piping independently of connected horizontal piping.
- I. Provide copper plated hangers and supports for copper piping.
- J. Design hangers for pipe movement without disengagement of supported pipe.

- K. Prime coat exposed steel hangers and supports. [Refer to Section 09 90 00.] Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.
- L. Provide sway bracing at changes in direction greater than 45 degrees for pipe sizes 4" and larger.
- M. Provide anchorage to restrain piping from axial movement.

3.10 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Prior to starting work, verify system is complete, flushed and clean. Verify pH of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).
- B. Inject disinfectant, free chlorine in liquid, powder, tablet or gas form, throughout system to obtain 50 to 80 mg/L residual. Bleed water from outlets to accomplish distribution.
- C. Maintain disinfectant in system for 24 hours. When final disinfectant residual tests less than 25 mg/L, repeat treatment.
- D. Flush disinfectant from system. Take samples no sooner than 24 hours after flushing, and analyze in accordance with AWWA C601.

3.11 SERVICE CONNECTIONS

- A. Install sanitary and storm sewer services. Before commencing work check invert elevations required for sewer connections, confirm inverts and verify proper slope for drainage and proper cover to avoid freezing.
- B. Install new water service complete with water meter with by-pass valves. Install sleeve and mechanical sleeve seal in wall for service main and supported at wall, caulked and made watertight. Install sleeve around service main to 6 inch above floor.

3.12 SCHEDULES

- A. Pipe Hanger Spacing:

PIPE MATERIAL	MAXIMUM HANGER SPACING Feet	HANGER ROD DIAMETER Inches
ABS (All sizes)	4	3/8
Aluminum (All sizes)	10	1/2
Cast Iron (All Sizes)	5	5/8
Cast Iron (All Sizes) with 10 foot length of pipe	10	5/8
CPVC, 1 inch and smaller	3	1/2
CPVC, 1-1/4 inches and larger	4	1/2
Copper Tube, 1-1/4 inches and smaller	6	1/2
Copper Tube, 1-1/2 inches and larger	10	1/2
Fiberglass	4	1/2
Glass	8	1/2
Polybutylene	2.67	3/8

Polypropylene	4	3/8
PVC (All Sizes)	4	3/8
Steel, 3 inches and smaller	12	1/2
Steel, 4 inches and larger	12	5/8

END OF SECTION

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SECTION 22 1113 - FACILITY WATER DISTRIBUTION PIPING

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. The water line and appurtenances shall be installed as shown on the plans and details and as specified herein and subject to the general provisions of Contract and in accordance with the current NTUA Construction Details and Specifications.

PART 2 - PRODUCTS - MATERIALS

2.1 PLASTIC PIPE (WATER AND SEWER):

These specifications cover:

- A. Polyvinyl Chloride (PVC) pipe and fittings intended for use in supply lines and distribution systems conveying potable water under pressure.
- B. Polyvinyl Chloride (PVC) pipe and fittings intended for use in lines conveying sewage and surface water not under pressure.
- C. Polyvinyl Chloride (PVC) plastic pipe shall be furnished with the approval and seal of the National Sanitation Foundation and shall also bear the approval of the National Science Foundation.
- D. Pipe sizes shall be as shown on the drawings and as specified herein.

2.2 MANUFACTURE AND MATERIALS (WATER USE)

- A. Polyvinyl Chloride (PVC) plastic pipe and fittings shall meet all applicable requirements of AWWA C 900 and shall be manufactured and suitable for use at maximum working pressures of 200 psi. Pipe and fittings must be assembled with a nontoxic lubricant.
- B. Rubber ring gaskets shall meet the requirements of ASTM D 1869.

2.3 TESTS

- A. All physical and chemical tests should be conducted at 73°F.
- B. The Contractor shall submit certifications from the pipe manufacturer.

2.4 HANDLING AND LAYING OF PLASTIC PIPE

- A. Storage, handling, and laying of plastic pipe, including trench preparation and backfill shall be in accordance with the appropriate manufacturers' recommended procedures.

2.5 CAST-IRON PIPE (STANDARD AND DUCTILE)

N/A

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2.6 GATE VALVES

- A. Gate valves shall be designed for 150 psi operating pressure and shall be Mueller Resilient Seat Type A-2370-20 or approved equal. Gate valves shall be supplied complete with valve box and cover. Valve boxes for 10 inches and smaller gate valves shall be 2-piece screw type. Clow Model F-2493 stay-put cover or approved equal.

2.7 BUTTERFLY VALVES

N/A

2.8 TAPPING SADDLES

- A. Tapping saddles shall be of bronze, cast-iron, malleable iron, or ductile iron with straps of bronze, iron, or steel. Iron or steel straps and nuts shall have a heavy cadmium or galvanized plating applied after the threads have been cut and finished. All saddle straps and nuts or material other than bronze shall be field coated with tar enamel after installation. The saddles will be clean and dry when the tar enamel is applied. Gaskets for all saddles shall be of rubber or neoprene. The saddles shall be tapped for the type of thread being used on the corporation stop. As an alternate to tapping saddles, pretapped couplings may be utilized when approved by the Architect/Engineer.

2.9 METERS

- A. Water meters shall be supplied by the Contractor.

2.10 METER BOXES

- A. Meter boxes and covers shall be of the type and size shown on the plans. Meter boxes shall be located as shown on the plans or as directed by the Architect/Engineer.

2.11 FIRE HYDRANTS

- A. Fire hydrants shall be manufactured by the following approved companies:
 - 1) Mueller (Centurion)
 - 2) Kennedy (Guardian)
 - 3) M & H (Model T-129, Traffic Model)and meet the following specifications:
- B. Fire hydrants shall be of the dry barrel, compression type closing with the line pressure with a working pressure of 150 psi and shall comply with AWWA Standard C-502-80 or latest revision thereof.
- C. Fire hydrants shall open left (counter clockwise) with a 1½", all bronze pentagon operating nut and an anti-friction washer above the trust collar to reduce opening torque. The hydrant's bonnet shall have a lubricant reservoir surrounding the working parts of the hydrant which is "O" ring sealed from the water pressure and weather conditions and a weather shield for freeze protection if available.
- D. Fire hydrants shall have two 2½" hose nozzles and one 4½" pumper nozzle with national standard hose nozzle threads. The hose nozzles shall be cast of minimum Grade D low zinc bronze and shall be threaded and locked into the upper barrel.

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- E. The hydrant traffic feature shall consist of a breakable flange and a breakable ferrous metal "safety sleeve" stem coupling with stainless steel stem coupling pins.
- F. The bronze sear ring shall be a minimum 5¼" inside diameter and shall thread into a bronze drain ring or busing forming an all bronze drainway with positive dealing resilient seat drain valve facings. All bronze shall be less the 16% zinc alloy with minimum yield of 20,000 psi as noted in Section 2.1, Table 1 of the above referenced standard. The main valve shall be replaceable with a light weight wrench by disassembly at the hydrant bonnet flange.
- G. Fire hydrants shall be 4 feet bury (unless otherwise noted) and shall have a completely assembled 6 inch mechanical joint shoe inlet. Underground flanging of these parts shall have a minimum of six ¾" rust-prohibitive bolts or the bolts shall be stainless steel.
- H. Fire hydrants shall be painted above the ground line with one coat of rust-prohibitive primer and one coat of yellow brushing enamel and all other exposed surfaces shall be coated with asphalt varnish as noted in Section 4.2, of the above standard.
- I. In no case shall the Contractor use pipe wrenches to operated fire hydrants.

2.12 CERTIFICATION

- A. The Architect/Engineer will be supplied with a certification on each item or type of material required in the water line, as to that item meeting the specifications and/or the referenced specifications before that item is installed.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. GENERAL: Pipe and accessories shall be new and unused. The type of pipe to be installed shall be one of the types scheduled for each particular use, at the Contractor's option, unless otherwise shown on the drawings. Cast-iron, ductile iron, or PVC pipe shall be used. All pipe will require sand bedding, utilizing imported material where soil conditions or the occurrence of rock, gravel or hard pan necessitate its provision as determined by the Architect/Engineer at the time of installation. Pipe and accessories shall be handled in such a manner as to insure delivery to the trench in sound, undamaged condition. Particular care shall be taken not to injure the pipe coating. No other pipe or material of any kind shall be placed inside of a pipe or fitting after the coating has been applied.
- B. The interior of the pipe shall be thoroughly cleaned of foreign matter before being lowered into the trench and shall be kept clean during operations by plugging or other approved methods. When work is not in progress, open ends of pipe and fittings shall be securely closed so that no other substance will enter the pipes or fittings. Any section of the pipe found to be defective before or after laying shall be replaced with sound pipe without additional expense to the Owner.
- C. All nuts and bolts utilized in underground pipe connections shall be stainless steel, high strength cast-iron or high strength wrought iron. The full length of each section of pipe shall rest solidly upon the bed, with recesses excavated to accommodate bells and joints. Any pipe that has the grade or joint disturbed after laying shall be taken up and relaid. Pipe shall not be laid in water or when trench or weather conditions are unsuitable for the work except by permission of the Architect/Engineer. All unconnected ends of pipes shall have a valve, plug, or cap installed on it.

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- D. Water lines shall not be laid closer horizontally than 10' from sewer lines and the water lines shall be at a higher elevation than the sewer. If this is not possible, separate trenches will be required and the water line shall be at least 2' above the sewer. When water and sewer lines cross each other, the water line shall be at least 3' above the sewer. If this distance is less than 3', the sewer shall be of ductile iron for a distance of 10' each side of the crossing with no joint closer than 3' from the crossing. If the sewer pipe is of concrete or vitrified clay, it shall be encased in concrete as shown on the drawings for a distance of 10' each side of the crossing or replace with iron pipe.

3.2 TRENCHING AND BACKFILLING

- A. All trenching and backfilling shall be in full accordance with applicable Sections of these specifications and as modified above for pipe laying in general.

3.3 PIPE LAYING

- A. Pipe shall be laid to line and/or grade shown on the plans or as directed by the Architect/Engineer. Changes in horizontal or vertical alignment of the pipe at a joint shall not exceed the manufacturer's recommended deflection for the type and size pipe being laid. When the change required is more than the recommended, a fitting or several short joints of pipe shall be used.
- B. When new pipe is to be connected to an existing pipe or when crossing an existing pipe line, the Contractor shall excavate the existing lines well in advance of the laying of the new pipe line to enable the Architect/Engineer to verify their elevation and placement and to make any changes in grade and/or alignment or the new pipe line that may be required.
- C. On all push-on type joints (bell and spigot, fluid-tite, and ring-tite) the rubber gasket shall be removed, cleaned, the groove cleaned, the gasket replaced, and the bell or plain end cleaned before jointing. The gasket and the bell or plain end of the pipe to be jointed shall both be lubricated with a suitable soft vegetable soap compound to facilitate jointing. Care shall be taken to insure that neither the bell or collar, or the pipe being jointed is damaged as it is being homed.
- D. Flange and mechanical joints shall be made with machine bolts and nuts of the proper size only. All components of these types of joints shall be cleaned before jointing. Only one gasket will be permitted in a flange joint. In a mechanical joint the plain end pipe shall be fully seated before the gasket and gland is slipped up to the bell. Nuts on both types of joints shall be tightened by alternating nuts 180° apart.
- E. Cast-iron or ductile iron pipe shall be installed in accordance with AWWA Specification C 600 and as herein specified.
- F. All fittings and valves shall be installed as per the type of joint as stated above or as shown on the plans.
- G. All couplings, clamps, sleeves, etc., shall be installed as per the manufacturer's recommendations and as approved by the Architect/Engineer.
- H. Service lines shall be installed with a 30" to 36" cover. Care shall be taken in laying the service line to prohibit kinks in the line or backfill with materials injurious to the line. The tubing shall only be cut and flared with tools especially designed for these purposes. It shall be the duty of the Contractor to leave the water turned on or off as found prior to meter transfers in order to obviate inconvenience in one case or damage in the latter. Water service lines including the piping, meter, and the meter box shall lie in a line perpendicular to the street's centerline.

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3.4 CUTTING

- A. The cutting of any type of pipe shall be done as per the manufacturer's recommendations as approved by the Architect/Engineer. Care shall be taken in cutting any pipe that has an internal and/or external linking or coating.

3.5 TRACER WIRE

- A. Tracer wire shall be installed with all water main lines and water service lateral pipes. Tracer wire shall be a minimum 8 gauge coated wire. A minimum of 3 feet pigtail shall be left in each water can for tracer attachment.

3.6 BLOCKING OF RIGID JOINTS

- A. All tees, crosses, bends and valves not called out on the plans as rigid joints shall have concrete poured in the general shape and to the minimum dimensions shown on the plans, between the pipe and the undisturbed wall of the trench. The concrete shall be placed in such a manner that no concrete is in contact with any bolts or nut on the pipe line.

3.7 HYDROSTATIC TESTS

- A. The Contractor shall be required to hydrostatic test all water mains, laterals, dead ends, and service lines in accordance with AWWA Specifications C 600. The test shall be conducted in the presence of the Architect/Engineer or his authorized representative. The testing of the lines shall be done without being connected to existing lines unless approved by the Architect/Engineer. The Contractor shall provide all temporary plugs required. If connections to the existing lines are allowed by the Architect/Engineer, it is with the understanding that the Contractor assumes any and all responsibility in case of damage or failure of the existing system. Leakage through connections to the existing system, leaks in the existing lines, or leaking existing valves under the test pressure will invalidate the test. The lines shall be tested at 150 lbs. or 1.5 times the normal working pressure of the line, whichever is greater, for not less than two hours. All taps, gauges and necessary equipment shall be provided by the Contractor as approved by the Architect/Engineer, however, the Contractor may utilize gauges provided by him if he so elects. Each section of the new line, between valves shall be tested to demonstrate that each valve will hold the test pressure. No pipe installed will be accepted if the leakage is greater than that determined by the following formula.

$$L = \frac{ND(P)^{1/2}}{7400}$$

in which L is the allowable leakage, in gallons per hour; N is the number of joints in the length of pipeline tested; D is the nominal diameter of the pipe in inches; and P is the test pressure in pounds per square inch gauge. During the test the test pressure should not lose more than 10 psig without being pumped back up to test pressure. The totals of the gallons of water required to hold the test pressure during the two hours and the amount of water required to return the line to the test pressure at the end of the test period is the total leakage. If the total leakage is less than the allowable, the line can be accepted. All visible leaks will be repaired regardless of the amount of the leakage.

3.8 DISINFECTING WATER LINES

- A. New lines shall be disinfected in accordance with AWWA C 601 or as follows:
- B. Mains shall be thoroughly flushed and then disinfected with chlorine gas or liquid solution, added by an approved method at one end of the line as water is drawn through the line and service connections. Flushing shall be done prior to chlorination. If no fire hydrants are on the new line or convenient outlet for flushing is

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available, the Contractor shall install flush point of the size, number, and location as directed by the Architect/Engineer at no additional cost to the Owner. The chlorine shall be placed in the line in the amount required to obtain a residual of 100 parts per million. The chlorine solution shall remain in the line for at least 24 hours. The line shall then be flushed until the chlorine residual is equal to the normal residual in the existing system or at 0.5 parts per million for unchlorinated water. After flushing has been completed and the line is placed into service, bacteria samples shall be taken in accordance with the following procedure:

- C. Collect two samples of water for bacteriological analysis at different locations.
- D. Should results of the bacteriological analysis be unsatisfactory, the water piping shall be taken out of service and the disinfection procedure repeated.
- E. Two additional samples will then be taken before placing the lines back into service.

3.9 INTERFERENCE WITH SERVICE AND SCHEDULE OF WORK

- A. The Contractor shall obtain the permission of the Architect/Engineer before making any connections with existing mains. The required operation of existing valves will be performed by the Contractor as directed by the Architect/Engineer and/or the owner.
- B. Work shall be started upon the direction the Architect/Engineer and shall be completed in a prompt, efficient manner in coordination with other utilities concerned.
- C. The Contractor may be required to do certain work at night, especially some set connections when, in the opinion of the Architect/Engineer, it will be necessary for the convenience of the Owner and general public. The Contractor shall notify the Architect/Engineer of water shutoffs that he plans to make and when the shutoff is to be made, the day and time of the shutoff, and the estimated length of time the water line will be out of service.
- D. The contractor shall notify the water customers that will be affected by a water shutoff of the impending shutoff. The water users shall be given ample time to provide themselves with a temporary supply of water. Notification shall be by personal contact and by notice in the local media.

END OF SECTION 22 1113

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SECTION 22 1313 - FACILITY SANITARY SEWER

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

- A. The sewer lines and appurtenances shall be installed as shown on the plans and details, and as specified herein and subject to the general provisions of Contract and in accordance with the current NTUA Sanitary Sewer Details and Specifications.

PART 2 PRODUCTS - MATERIALS

2.1 MANHOLES - Pre-cast

2.2 MANHOLE FRAME AND COVER SETS

- A. Castings shall conform to ASTM A 48, Class 25C. The bearing surfaces of the frames and covers shall be ground or machined, and the cover shall seat firmly onto the frame without rocking. Manhole frames and covers shall not weigh less than 305 lbs. combined, unless otherwise specified.
- B. Cover shall weigh a minimum of 125 lbs.

2.3 DRAIN TILE

- A. Standard drain tile shall conform to latest ASTM C-4. Pipe of porous, perforated, or other design intended for subdrainage shall be as indicated on the drawings and subject to approval by the Architect/Engineer.

2.4 UNCLASSIFIED CASTINGS

- A. All castings not specifically classified shall conform to the requirements of ASTM A 48, Class 30.

2.5 ASPHALTUM COATING

- A. Unless otherwise specified, castings shall be painted or dipped in commercial quality asphaltum paint.

2.6 CERTIFICATION

- A. The Architect/Engineer will be supplied with a certification on each item or type of material required in the sewer line, as to that item meeting the specifications and/or the reference specifications before that item is installed.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Pipe and appurtenances shall be new and unused. The type of pipe to be installed shall be as shown on the drawings. Pipe and appurtenances shall be handled in such a manner as to insure delivery to the trench in sound, undamaged condition. Particular care shall be taken to prevent damage to any pipe coating.
- B. The interior of the pipe shall be thoroughly cleaned of foreign material before being lowered into the trench and shall be kept clean during construction operations. When work is not in progress, the open ends of pipe shall be securely closed so that no foreign materials will enter the pipe. Any section of pipe found to be defective before or after laying shall be replaced with sound pipe, or repaired in a manner satisfactory to the Architect/Engineer, without additional expense to the Owner.

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- C. Pipe shall be laid to line and grade as shown on the plans and as stake in the field. When connections are to be made to any existing manhole, pipe or other improvement, the actual elevation or position of which cannot be determined without excavation, the Contractor shall excavate to expose the existing improvement before laying the connecting pipe or conduit. When existing underground improvements may reasonably be expected to conflict with the line or grade established for the new sewer line, the Architect/Engineer shall request and the Contractor shall excavate as necessary to expose and locate such potentially conflicting underground improvements prior to laying the new pipe. Any adjustment in line or grade which may be necessary to accomplish the intent of the plans will be made, and the Architect/Engineer will be paid for any additional work resulting from such change in line or grade in the manner provided for in the general provisions of Contract.
- D. Pipe shall be laid in a continuous operation from structure to structure, with the socket or collar ends of the pipe butted unless otherwise permitted by the Architect/Engineer.

3.2 TEES OR WYES (SANITARY SEWER PIPELINES)

- A. Four inch diameter tees or wyes shall be placed to service all laterals as shown on the plans or as directed by the Architect/Engineer. Tees shall be installed at an angle 45° above horizontal, and wyes are to be vertical. Tees and wyes shall be provided with a water-tight stopper disc. Riser pipe shall be provided as shown on the plans, unless otherwise specified. Service connections from the tees or wyes shall be provided and installed in accordance with local or state plumbing codes.

3.3 TESTS FOR LEAKAGE - N/A

- A. GENERAL: Unless otherwise shown on the drawings or specifically deleted by the Architect/Engineer, in writing, all sanitary sewers shall be tested for leakage. The test shall consist of testing each manhole for leakage and an Air Test of the sewer pipe, as stated in these specifications, as appropriate to the particular section of sanitary sewer being tested and as directed by the Architect/Engineer.
- B. The Architect/Engineer may, at his option, Air Test the sanitary sewer line before backfilling the trench to aid the Contractor in checking the installation for any defects. Such testing is at the option of the Architect/Engineer and shall not constitute an Acceptance test under these specifications.
- C. The test for Acceptance and compliance with these specifications shall be performed after the pipe zone backfilling has been completed. In the case of new sanitary sewer lines with laterals included as an integral part of the project, the test for Acceptance and Compliance with these specifications shall be performed after the laterals or stubs have been completed and backfilled.
- D. Acceptance and compliance with these specifications shall be performed after the laterals or stubs have been completed and backfilled.
- E. If the leakage, as shown by the test, is greater than allowed by these specifications, the pipe shall be overhauled by the Contractor at his expense and, if necessary, relaid until the pipe will satisfactorily pass the test.
- F. The Contractor shall, at his own expense, furnish all water, material, tools and labor for making the test required. All tests shall be made under direction of the Architect/Engineer.

3.4 INSPECTION CLEANING AND LAMPING

- A. All complete sewer lines will be flushed and cleaned before acceptance by the Architect/Engineer.

3.5 LAMPING

- A. No pipe spalls, rocks, dirt, joint compounds, cement mortar, and other trash and obstructions shall be left in a sewer pipeline of any size or type. If this debris is removed by flushing, the manhole outlet shall be bagged or

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plugged before construction so that this debris will not be carried into or contaminate the existing line. All lines laid shall be lapped from manhole to manhole, in order to determine accuracy of line and grade and presence of obstructions. The lines, when lapped, shall reveal, between manholes, the following percentage of cross sectioned area of the pipe:

For sanitary sewer lines - 75%

3.6 MANHOLE CONSTRUCTION

- A. Manholes shall be constructed in accordance with the design and construction details shown on the drawings and as hereinafter provided. Precast concrete cone units may be used on brick, concrete block, and poured concrete manholes when specified.
- B. All manhole foundations or bases shall be concrete and constructed as shown on the plans.

3.7 CONCRETE MANHOLES

- A. MATERIALS: Unless otherwise shown on the drawings, materials to be used for concrete manholes shall be pre-cast materials.
- B. CONSTRUCTION: Manholes may be constructed of poured concrete (reinforced or non-reinforced) or precast reinforced concrete risers and tops complying with the requirements of ASTM C 478. Manhole frames and cover sets shall be as specified herein.

END OF SECTION 22 1313

SECTION 22 30 00
PLUMBING EQUIPMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Water Heaters
 - 2. Thermal Expansion Tanks

1.2 SUBMITTALS

- A. Product Data: Submit manufacturer's literature for humidifier

1.3 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit literature and parts list.

1.4 QUALITY ASSURANCE

- A. Maintain one copy of each document on site.

1.5 WARRANTY

- A. Furnish one year manufacturer warranties for all equipment.

PART 2 PRODUCTS

2.1 ELECTRIC WATER HEATERS

- A. Manufacturers:
 - 1. A.O. Smith
 - 2. State
 - 3. Lochinvar
 - 4. Substitutions: Permitted
- B. Non-CFC foam insulated, jacketed, glass lined steel tank, premium grade anode rods, rated at 150 psi maximum working pressure, Uniform Energy Factor (UEF) rating .90-.93, temperature and pressure relief valve.
- C. Stainless steel heating elements, automatic adjustable thermostat.
- D. See Plumbing Schedule for additional information.

2.2 GAS WATER HEATERS

- A. Manufacturers:
 - 1. A.O. Smith
 - 2. State
 - 3. Substitutions: Permitted
- B. Automatic, natural gas fired, high efficiency, direct vent, vertical storage type:
 - 1. Maximum working pressure: 160 psi.
- C. Tanks: Welded steel ASME labeled pressure vessel with submerged combustion chamber with helical heat exchanger coil, glass lined, with ASME rated temperature and pressure relief valve.
- D. Controls: Temperature control from 90 to 181 degrees F, gas pressure regulator, direct spark ignition.
- E. Codes and Standards: CSA Certified, ASHRAE/IESNA 90.1, design certified by UL Laboratories to ANSI Z21.10.2-CSA 4.3 Standards and NSF Standard 5.

2.3

2.4 THERMAL EXPANSION TANK

- A. Manufacturers:
 - 1. Taco
 - 2. Amtrol
 - 3. Bell & Gossett
 - 4. Substitutions: Permitted
- B. Steel shell lined tank, for use in potable water systems, maximum working pressure 150 psi, maximum operating temperature 140 degrees F
- C. Heavy duty butyl diaphragm, NSF/ANSI 61.
- D. Factory precharged to 55 psig.
- E. Substitutions: Permitted.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install water heaters in accordance to AGA, NSF and NFPA requirements. Coordinate with plumbing piping and related fuel piping, gas venting and electrical work to achieve operating system.
- B. Clean and flush tanks after installation. Keep openings sealed until pipe connections are made.
- C. On tanks, install drain at water inlet and outlet, thermometer with range of 40 to 200 degrees F, and ASME pressure relief valve suitable for maximum working pressure.

END OF SECTION

SECTION 22 40 00 PLUMBING FIXTURES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Water closets.
 - 2. Lavatories.
 - 3. Sinks.
 - 4. Bathtubs.

1.2 SUBMITTALS

- A. Product Data: Submit manufacturer's literature for plumbing fixtures.

1.3 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit literature and parts list.

1.4 WARRANTY

- A. Furnish one year manufacturer warranties for all equipment.

PART 2 PRODUCTS

2.1 TANK TYPE WATER CLOSETS

- A. Manufacturers:
 - 1. Kohler
 - 2. American Standard
 - 3. Gerber
 - 4. Toto
 - 5. Substitutions: Permitted.
- B. Bowl: Floor mounted vitreous china, siphon jet action, close-coupled closet combination with regular rim, vitreous china closet tank with fittings and lever flushing valve, bolt caps.
- C. Seat: Solid white plastic, closed front and cover, brass bolts.
- D. Wall Mounted Carrier: Adjustable cast iron frame, integral drain hub and vent, adjustable spud, lugs for floor and wall attachment, threaded fixture studs with nuts and washers.

2.2 LAVATORIES

- A. Manufacturers:
 - 1. Kohler
 - 2. American Standard
 - 3. Zurn
 - 4. Gerber
 - 5. Toto
 - 6. Substitutions: Permitted.
- B. Body: Pedestal mounted vitreous china, front overflow, self draining deck.
- C. Faucets
 - 1. Manufacturers:
 - 2. Moen

3. Chicago Faucets
4. Zurn
5. Sloan

2.3 SINKS

- A. Manufacturers:
 1. Elkay
 2. Just
 3. Substitutions: Permitted
- B. Faucets
 1. Manufacturers:
 - a. Elkay
 - b. Moen
 - c. Delta

2.4 BATHTUBS

- A. Manufacturers:
 1. Kohler
 2. American Standard
 3. Delta
 4. Substitutions: Permitted
- B. Faucets
 1. Manufacturers:
 - a. Elkay
 - b. Moen
 - c. Delta
 - d. Gerber
- C.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify adjacent construction is ready to receive rough-in work of this section.
- B. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough in and installation.

3.2 INSTALLATION

- A. Install each fixture with chrome plated rigid or flexible supplies with screwdriver stops, reducers, and escutcheons.
- B. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.
- C. Install all handicapped accessible water closet flush controls on the open side of the water closet enclosure.

END OF SECTION

SECTION 23 05 00 COMMON WORK RESULTS FOR HVAC

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Identification for HVAC Piping and Equipment.
 - 2. Sleeves.
 - 3. Mechanical sleeve seals.
 - 4. Formed steel channel.

1.2 FINAL INSPECTIONS

- A. Engineer will make periodic inspections as appropriate and deemed necessary by Engineer. One final inspection for completion of project will be performed by the Engineer. Any and all additional inspections requested by the Contractor or required because of contractor's failure to complete Scope of Work shall be paid for by the Contractor. The cost of additional inspection(s) shall be deducted from the contract amount stated in the agreement between the Owner and the Contractor. Costs for additional inspections shall be assessed at the Engineer's hourly rates.

1.3 SUBMITTALS

- A. Shop Drawings: Submit for piping and equipment identification list of wording, symbols, letter size, and color coding for pipe identification and valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.
- B. Product Data for Pipe and Equipment Identification: Submit for mechanical identification manufacturers catalog literature for each product required.
- C. All data for Division 23 must be submitted as a single package as the Engineer will commence review only when all data has been received. Submit shop drawings and product data in a 3-ring binder sub-tabbed and grouped to include complete submittals of related system, products, and accessories. Electronic submittals are acceptable in accordance with Paragraph D below. Engineer will commence review only when all data has been received in the format required. Incomplete submittals will not be reviewed until the complete package is received.
- D. Electronic submittals will be reviewed provided the following conditions are met.
 - 1. Complete submittals in pdf format will be reviewed by CSI Specification Division
 - 2. All data for Division 23 must be submitted as a single package as the Engineer will commence review only when all data has been received.
 - 3. Submittals linked to a manufacturer's web site will not be reviewed
 - 4. Re-submittals must highlight changes from previous submittals.
 - 5. Mixed submittals (part paper and part electronic) will not be reviewed
- E. The Contractor shall determine and verify field measurements and field construction criteria for conformance with Drawings and Specifications and for conflicts with other items of Construction past or present. He shall coordinate each submittal with the requirements of the Work and of the Contract Documents and notify the Engineer in writing, at the time of the submission, of any and all deviations in the submittals from requirements of the Work and Contract Documents.
- F. No fabrication or work which requires submittals shall begin until submittals are returned with the Engineer's approval.
- G. Engineer's review does not constitute acceptance or responsibility for accuracy or dimensions, nor shall it relieve the Contractor from meeting any requirements of the Work and Contract Documents, nor shall it constitute approval for any deviation from the Contract Documents unless such deviations are specifically stated as such on the submittal and specifically allowed by the Engineer

by specific written notification for each such variation. The Engineer's review will not relieve the Contractor from responsibility for errors or omissions in the Shop Drawings.

H. Submit copies of materials for submittal review as required by Division 1.

1.4 LEED SUBMITTALS EQ Credit 4.1 Low Emitting Materials: Adhesives and Sealants

A. Refer to Specification Section 01 81 13 for VOC limits for products that are applied on-site to interior locations (within the weatherproofing system). Provide an MSDS, cut sheet, or letter from the manufacturer for each adhesive and sealant indicating the VOC level for each product.

A.

1.5 PERMITS

A. Permits necessary for the performance of the work under this contract shall be secured and paid for by the Contractor. Final inspection by the Engineer will not be made or certificate of final payment issued until certificates of satisfactory inspection from the inspection authorities are delivered.

1.6 SUBSTITUTIONS

A. Prior approval required. When required by Division 1 of the Specifications, materials and equipment in Division 23 will be reviewed for prior approval. Bidder is required to document each request with complete data substantiating compliance of proposed substitution with Contract Documents.

B. Basis of Design. Equipment/materials indicated in schedules and details shown on the plans form the Basis of Design for this project. Alternate equipment/materials proposed by the contractor must match the specified in dimension, configuration, weight, electrical requirements, etc. Any revision to plans necessary to accommodate the alternate equipment will be the responsibility of the contractor and be reflected in a shop drawing prepared by the contractor and approved by the Engineer.

1.7 TRAINING

A. The mechanical contractor shall conduct a 4 hour minimum training session with owner designated staff to review all mechanical equipment installed under this contract. At a minimum, the session will include operation and maintenance, programming, filter change requirements, and basic operation of the systems. Contractor shall physically demonstrate the operation of each piece of equipment. A sign in sheet and agenda indicating a list of all equipment reviewed shall be included in the close out documents.

PART 2 PRODUCTS

2.1 IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

A. Plastic Nameplates: Laminated three-layer plastic with engraved black letters on light background color.

B. Plastic Tags: Laminated three-layer plastic with engraved black letters on light background color, minimum 1-1/2 inches diameter.

C. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering. Larger sizes may have maximum sheet size with spring fastener. Color and Lettering: Conform to ASME A13.1.

D. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings. Color and Lettering: Conform to ASME A13.1.

E. Plastic Underground Pipe Markers: Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

2.2 SLEEVES

A. Sleeves for Pipes Through Non-fire Rated Floors: 18 gage thick galvanized steel.

B. Sleeves for Pipes Through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe or 18 gage thick galvanized steel.

- C. Sleeves for Round Ductwork: Galvanized steel.
- D. Sleeves for Rectangular Ductwork: Galvanized steel or wood.
- 2.3 MECHANICAL SLEEVE SEALS
 - A. Manufacturers:
 - 1. Thunderline Link-Seal, Inc.
 - 2. Substitutions: Permitted
 - B. Product Description: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.
- 2.4 FORMED STEEL CHANNEL
 - A. Manufacturers:
 - 1. Allied Tube & Conduit Corp.
 - 2. B-Line Systems
 - 3. Unistrut Corp.
 - 4. Substitutions: Permitted.
 - B. Product Description: Galvanized 12 gage thick steel. With holes 1-1/2 inches on center.
- PART 3 EXECUTION
- 3.1 EXAMINATION
 - A. Verify openings are ready to receive sleeves.
- 3.2 INSTALLATION - PIPING AND EQUIPMENT IDENTIFICATION
 - A. Install plastic nameplates with adhesive.
 - B. Install plastic tags with corrosion resistant metal chain.
 - C. Install name plates and labels on all equipment listed in the plans and specifications.
- 3.3 INSTALLATION - SLEEVES
 - A. Exterior watertight entries: Seal with mechanical sleeve seals.
 - B. Set sleeves in position in forms. Provide reinforcing around sleeves.
 - C. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
 - D. Extend sleeves through floors 1 inch above finished floor level. Caulk sleeves.
 - E. Where piping or ductwork penetrates floor, ceiling, or wall, close off space between pipe or duct and adjacent work with firestopping insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.
 - F. Install chrome plated steel escutcheons at finished surfaces.
- 3.4 EXISTING SERVICES
 - A. The Contractor shall carefully examine the drawings and specifications, visit the site of the work, fully inform himself as to all existing conditions, dimensions and limitations before starting work.
 - B. If existing active or non-active services (which are not shown on plans) are encountered that require relocation or disconnection, the Contractor shall notify the Engineer for a decision on proper handling of these services. The Contractor shall not proceed with the work until so authorized.
- 3.5 SUBSTANTIAL COMPLETION AND FINAL INSPECTION REQUIREMENTS
 - A. Before Substantial Completion can be granted, the following items must be completed and submitted to the Owner/Engineer.
 - 1. An approved Test and Balance Report.

2. Operation test.
 3. Control diagrams, wiring diagrams, control sequences, and engineering data on components.
 4. 4 hour training session of owner representative on maintenance, operation and control of all equipment.
- B. Prior to the Final Inspection or consideration of Final Payment, the Contractor shall:
1. Provide copies of permits and/or inspection certificates.
 2. Provide a Check-out report.
 3. Provide Operating and Maintenance Manual(s).
 4. Provide equipment warranties.
 5. Provide Record as-built Drawings.
 6. Return keys to the Owner.
 7. Deliver all spare parts.
 8. Touch up any damaged finishes.
 9. Provide a copy of attendance roster for equipment training sessions.

END OF SECTION

SECTION 23 07 00

HVAC INSULATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. HVAC piping insulation, jackets and accessories.
 - 2. HVAC ductwork insulation, jackets, and accessories.

1.2 SUBMITTALS

- A. Product Data: Submit product description, thermal characteristics and list of materials and thickness for each service, and location.
- B. Manufacturer's Installation Instructions: Submit manufacturers published literature indicating proper installation procedures.
- C. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.3 QUALITY ASSURANCE

- A. Test pipe insulation for maximum flame spread index of 25 and maximum smoke developed index of not exceeding 50 in accordance with ASTM E84, UL 723, or NFPA 255.
- B. Pipe insulation manufactured in accordance with ASTM C585 for inner and outer diameters.
- C. Factory fabricated fitting covers manufactured in accordance with ASTM C450.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.
- B. Protect insulation from weather and construction traffic, dirt, water, chemical, and damage, by storing in original wrapping.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Install insulation only when ambient temperature and humidity conditions are within range recommended by manufacturer.
- B. Maintain temperature before, during, and after installation for minimum period of 24 hours.

1.6 WARRANTY

- A. Furnish one year manufacturer warranty on all products and services.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Manufacturers for Glass Fiber and Mineral Fiber Insulation Products:
 - 1. CertainTeed.
 - 2. Knauf.
 - 3. Johns Manville.
 - 4. Owens-Corning.
 - 5. Substitutions: Permitted.
- B. Manufacturers for Closed Cell Elastomeric Insulation Products:
 - 1. Aeroflex. Aerocell.
 - 2. Armacell, LLC. Armaflex.
 - 3. Nomaco. K-flex.

- 4. Substitutions: Permitted.
 - C. Manufacturers for Polyisocyanurate Foam Insulation Products:
 - 1. Dow Chemical Company.
 - 2. Substitutions: Permitted.
 - D. Manufacturers for Extruded Polystyrene Insulation Products:
 - 1. Dow Chemical Company.
 - 2. Substitutions: Permitted.
- 2.2 PIPE INSULATION
- A. TYPE P-1: ASTM C547, molded glass fiber pipe insulation.
 - 1. Thermal Conductivity: 0.23 at 75 degrees F.
 - 2. Operating Temperature Range: 0 to 850 degrees F.
 - 3. Vapor Barrier Jacket: ASTM C1136, Type I, factory applied reinforced foil kraft with self-sealing adhesive joints.
 - 4. Jacket Temperature Limit: minus 20 to 150 degrees F.
 - B. Type P-2: ASTM C534, Type I, flexible, closed cell elastomeric insulation, tubular.
 - 1. Thermal Conductivity: 0.27 at 75° F.
 - 2. Operating Temperature Range: Minus 70° to 180°F.
- 2.3 PIPE INSULATION ACCESSORIES
- A. Vapor Retarder Lap Adhesive: Compatible with insulation.
 - B. Covering Adhesive Mastic: Compatible with insulation.
 - C. Piping Shields: Galvanized steel saddles and inserts not less than 6 inches long, matching thickness and contour of adjoining insulation.
 - D. Adhesives: Compatible with insulation.
- 2.4 DUCTWORK INSULATION
- A. TYPE D-1: ASTM C1290, Type III, flexible glass fiber, commercial grade with factory applied reinforced aluminum foil jacket meeting ASTM C1136, Type II.
 - 1. Thermal Conductivity: 0.25 at 75 degrees F.
 - 2. Maximum Operating Temperature: 250 degrees F.
 - B. TYPE D-2: ASTM C612, Type IA or IB, rigid glass fiber, with factory applied reinforced aluminum foil facing meeting ASTM C1136, Type II.
 - 1. Thermal Conductivity: 0.24 at 75 degrees F.
 - C. TYPE D-3: ASTM C612, Type IA or IB, rigid glass fiber, no facing.
 - 1. Thermal Conductivity: 0.24 at 75 degrees F.
 - D. TYPE D-4: ASTM C1071, Type I, flexible, glass fiber duct liner with coated air side.
 - 1. Thermal Conductivity: 0.25 at 75 degrees F.
 - 2. Maximum Operating Temperature: 250 degrees F.
 - 3. Maximum Air Velocity: 6,000 feet per minute.
 - E. TYPE D-5: ASTM C1071, Type II, rigid, glass fiber duct liner with coated air side.
 - 1. Thermal Conductivity: 0.23 at 75 degrees F.
 - 2. Density: 3.0 pound per cubic foot.
 - 3. Maximum Operating Temperature: 250 degrees F.

4. Maximum Air Velocity: 4,000 feet per minute.
 - F. TYPE D-6: ASTM C534, Type II, flexible, closed cell elastomeric insulation, sheet.
 1. Thermal Conductivity: 0.27 at 75 degrees F.
 2. Service Temperature Range: Range: Minus 58 to 180 degrees F.
 - G. TYPE D-7: ASTM C534, Type II, flexible, closed cell elastomeric insulation, sheet laminated with thermoplastic rubber membrane.
 1. Thermal Conductivity: 0.27 at 75 degrees F.
 2. Service Temperature Range: Range: Minus 58 to 180 degrees F.
 - H. TYPE D-8: Inorganic blanket encapsulated with scrim reinforced foil meeting UL 1978.
 1. Thermal Conductivity: 0.42 at 500 degrees F.
 2. Weight: 1.4 pound per square foot.
 3. Flame spread rating of 0 and smoke developed rating of 0 in accordance with ASTM E84.
- 2.5 DUCTWORK INSULATION JACKETS
- A. Aluminum Duct Jacket: A foil faced UV resistant, vapor barrier membrane, self-stick, self-healing, with a zero perm rating. Bright white matte finish that meets solar reflectance and emissivity of Cool Roof Rating Council (CRRC) and California Title 24.
 1. Manufacturers: Alumaguard.
- 2.6 DUCTWORK INSULATION ACCESSORIES
- A. Vapor Retarder Tape:
 1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.
 - B. Vapor Retarder Lap Adhesive: Compatible with insulation.
 - C. Adhesive: Waterproof, ASTM E162 fire-retardant type.
 - D. Liner Fasteners: Galvanized steel, impact applied with press-on head.
 - E. Tie Wire: 0.048 inch stainless steel with twisted ends on maximum 12 inch centers.
 - F. Lagging Adhesive: Fire resistive to ASTM E84, NFPA 255 or UL 723.
 - G. Impale Anchors: Galvanized steel, 12 gage self-adhesive pad.
 - H. Adhesives: Compatible with insulation.
 - I. Membrane Adhesives: As recommended by membrane manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify piping, equipment and ductwork has been tested before applying insulation materials.
- B. Verify surfaces are clean and dry, with foreign material removed.

3.2 INSTALLATION - PIPING SYSTEMS

- A. Piping Exposed to View in Finished Spaces: Locate insulation and cover seams in least visible locations.
- B. Continue insulation through penetrations of building assemblies or portions of assemblies having fire resistance rating of one hour or less. Provide Intumescent firestopping when continuing insulation through assembly. Finish at supports, protrusions, and interruptions. Refer to Section 07 84 00 for penetrations of assemblies with fire resistance rating greater than one hour.
- C. Piping Systems Conveying Fluids Below Ambient Temperature:

1. Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, expansion joints, and through hangers.
 2. Furnish factory-applied or field-applied vapor retarder jackets. Secure factory-applied jackets with pressure sensitive adhesive self-sealing longitudinal laps and butt strips. Secure field-applied jackets with outward clinch expanding staples and seal staple penetrations with vapor retarder mastic.
 3. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor retarder adhesive or PVC fitting covers.
- D. Inserts and Shields:
1. Piping 1-1/2 inches Diameter and Smaller: Install galvanized steel shield between pipe hanger and insulation.
 2. Piping 2 inches Diameter and Larger: Install insert between support shield and piping and under finish jacket.
 - a. Insert Configuration: Minimum 6 inches long, of thickness and contour matching adjoining insulation; may be factory fabricated.
 - b. Insert Material: Compression resistant insulating material suitable for planned temperature range and service.
 3. Piping Supported by Roller Type Pipe Hangers: Install galvanized steel shield between roller and inserts.
- E. Insulation Terminating Points:
1. Condensate Piping: Insulate entire piping system and components to prevent condensation.
- F. Buried Piping: Insulate only where insulation manufacturer recommends insulation product may be installed in trench, tunnel or direct buried. Install factory fabricated assembly with inner all-purpose service jacket with self-sealing lap, and asphalt impregnated open mesh glass fabric, with 1 mil thick aluminum foil sandwiched between three layers of bituminous compound; outer surface faced with polyester film.
- G. Heat Traced Piping Interior to Building: Insulate fittings, joints, and valves with insulation of like material, thickness, and finish as adjoining pipe. Size large enough to enclose pipe and heat tracer.
- H. Heat Traced Piping Exterior to Building: Insulate fittings, joints, and valves with insulation of like material, thickness, and finish as adjoining pipe. Size insulation large enough to enclose pipe and heat tracer. Cover with aluminum or stainless steel jacket with seams located at 3 or 9 o'clock position on side of horizontal piping with overlap facing down to shed water.
- I. Prepare pipe insulation for finish painting. Refer to Division 09.
- 3.3 INSTALLATION - DUCTWORK SYSTEMS
- A. Duct dimensions indicated on Drawings are finished inside dimensions.
- B. Insulated ductwork conveying air below ambient temperature:
1. Provide insulation with vapor retarder jackets.
 2. Finish with tape and vapor retarder jacket.
 3. Continue insulation through walls, sleeves, hangers, and other duct penetrations.
 4. Insulate entire system including fittings, joints, flanges, fire dampers, flexible connections, and expansion joints.
- C. Insulated ductwork conveying air above ambient temperature:
1. Provide with or without standard vapor retarder jacket.
 2. Insulate fittings and joints. Where service access is required, bevel and seal ends of insulation.

D. External Glass Fiber Duct Insulation:

1. Secure insulation with vapor retarder with wires and seal jacket joints with vapor retarder adhesive or tape to match jacket.
2. Secure insulation without vapor retarder with staples, tape, or wires.
3. Install without sag on underside of ductwork. Use adhesive or mechanical fasteners where necessary to prevent sagging. Lift ductwork off trapeze hangers and insert spacers.
4. Seal vapor retarder penetrations by mechanical fasteners with vapor retarder adhesive.
5. Stop and point insulation around access doors and damper operators to allow operation without disturbing wrapping.

E. External Elastomeric Duct Insulation:

1. Adhere to clean oil-free surfaces with full coverage of adhesive.
2. Seal seams and butt joints with manufacturer's recommended adhesive.
3. When application requires multiple layers, apply with joints staggered.
4. Insulate standing metal duct seams with insulation of like material and thickness as adjacent duct surface. Apply adhesive at joints with flat duct surfaces.
5. Lift ductwork off trapeze hangers and insert spacers.

F. Duct Liner:

1. Adhere insulation with adhesive for 100 percent coverage.
2. Secure insulation with mechanical liner fasteners. Comply with SMACNA Standards for spacing.
3. Seal and smooth joints. Seal and coat transverse joints.
4. Seal liner surface penetrations with adhesive.
5. Cut insulation for tight overlapped corner joints. Support top pieces of liner at edges with side pieces.

G. Ducts Exterior to Building:

1. Install insulation according to external duct insulation or duct liner paragraph above.
2. Provide external insulation with vapor retarder jacket. Cover with outdoor jacket listed above.
3. Finish with aluminum duct jacket.
4. Caulk seams at flanges and joints. Located major longitudinal seams on bottom side of horizontal duct sections.

H. Prepare duct insulation for finish painting. Refer to Division 09.

3.4 SCHEDULES

A. Cooling Services Piping Insulation Schedule:

Condensate Piping from Cooling Coils	P-5	All sizes	0.5
Refrigerant Liquid	N/A	All sizes	N/A
Refrigerant Hot Gas	P-5	All sizes	0.5

A. Ductwork Insulation Schedule:

Combustion Air	D-1	R6
Outside Air Intake	D-1	R6
Equipment Casings	D-1	R6
Supply Ducts (internally insulated)	D-4	R6
Return Ducts (internally insulated)	D-4	R6
Supply Ducts (externally insulated) Thickness indicated is installed thickness.	D-1	R6
Return Ducts (externally insulated) Thickness indicated is installed thickness.	D-1	R6
Duct Coils	D-1	R6
Kitchen Exhaust Duct (2 layers of 1-1/2 inch each)	D-8	3.0"
Supply Air, Return Air, (exterior to building on roof)	D-2 or D-7	R12
Exhaust Ducts Within 10 feet of Exterior Openings [Thickness indicated is installed thickness.]	D-1	R6
Exhaust Ducts Exposed to Outdoor Air	D-1	R6
Rectangular Supply Ducts Downstream of Variable Air Volume Boxes (internally insulated)	D-4 or D-5	R6
Rectangular Supply Ducts Downstream of Variable Air Volume Boxes (externally insulated)	D-1	R6
Round Supply Ducts Downstream of Variable Air Volume Boxes (externally insulated)	D-1	R6
Transfer Air Ducts (internally insulated)	D-4 or D-5	R6

END OF SECTION

SECTION 23 11 00

FACILITY FUEL PIPING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pipe hangers and supports.
 - 2. Pipe and pipe fittings.
 - 3. Valves.
 - 4. Gas pressure regulators.

1.2 SUBMITTALS

- A. Product Data:
 - 1. Pipe Hangers and Supports: Submit manufacturers catalog data including load carrying capacity.
 - 2. Valves: Submit manufacturers catalog information with valve data and ratings for each service.
- B. Pipe Hangers and Supports: Design data, indicate pipe sizes, load carrying capacity of trapeze, multiple pipe, and riser support hangers.
- C. Manufacturer's Installation Instructions: Submit installation instructions for material and equipment.
- D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.3 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit spare parts lists and maintenance procedures.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with NFPA 54.
- B. List and label flexible connectors in accordance with UL 536.
- C. Maintain one copy of each document on site.

1.5 WARRANTY

- A. Furnish one year manufacturer warranty for materials and services.

PART 2 PRODUCTS

2.1 PIPE HANGERS AND SUPPORTS

- A. Manufacturers:
 - 1. Carpenter & Paterson Inc.
 - 2. Creative Systems Inc.
 - 3. Flex-Weld, Inc.
 - 4. Glope Pipe Hanger Products Inc.
 - 5. Michigan Hanger Co.
 - 6. Superior Valve Co.
 - 7. Substitutions: Permitted.
- B. Conform to ASME B31.9; ASTM F708; MSS SP 58; MSS SP 69 or MSS SP 89.
- C. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron or Carbon steel, adjustable swivel, split ring.

Vertical Support: Steel riser clamp.

2.2 PIPES AND TUBES

A. Natural Gas Piping, above Grade:

1. Steel Pipe: ASTM A53/A53M, Grade B, Schedule 40 black, with malleable iron or forged steel fittings, screwed or welded.

2.3 VALVES

A. Manufacturers:

1. American Valve
2. FMC Crosby Valve
3. Red-White Valve Corp.
4. Substitutions: Permitted.

B. Gate Valves:

1. Up to 2 inches: Bronze body, bronze trim, non-rising stem, hand wheel, inside screw, double wedge disc, soldered or threaded.

C. Ball Valves:

1. Up to 2 inches: Bronze or stainless steel one piece body, chrome plated brass ball, teflon seats and stuffing box ring, lever handle, solder or threaded ends.

D. Plug Valves:

1. Up to 2 inches: Bronze body, bronze tapered plug, non-lubricated, Teflon packing, threaded ends.

E. Swing Check Valves:

1. Up to 2 inches: Bronze body and swing disc, solder or threaded ends.

2.4 GAS SERVICE PRESSURE REGULATORS

A. Pressure Regulators:

1. Manufacturers:
 - a. Sensus 143-90
 - b. Substitutions: Not Permitted.

2.5

2.6 PIPING SPECIALTIES

A. Flanges, Unions, and Couplings:

1. Pipe Size 2 inches and Under: Malleable iron unions for threaded ferrous piping; bronze unions for copper pipe, soldered joints.
2. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

B. Strainers:

1. Size 2 inches and Under: Threaded brass or iron body for 175 psig working pressure, Y pattern with 1/32 inch stainless steel perforated screen.
2. Size 2-1/2 inch to 4 inch: Flanged iron body for 175 psig working pressure, Y pattern with 3/64 inch stainless steel perforated screen.
3. Size 5 inch and Larger: Flanged iron body for 175 psig working pressure, basket pattern with 1/8 inch stainless steel perforated screen.

C. Flexible Connectors:

1. Corrugated stainless steel hose with single layer of stainless steel exterior braiding, minimum 9 inches long with copper tube ends; for maximum working pressure 300 psig.

PART 3 EXECUTION

3.1 PREPARATION

- A. Ream pipe and tube ends. Remove burrs.
- B. Remove scale and dirt, on inside and outside piping before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.2 INSTALLATION - INSERTS

- A. Install inserts for placement in concrete forms.
- B. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
- C. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.
- D. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.

3.3 INSTALLATION - PIPING SYSTEMS

- A. Paint all exposed exterior steel gas piping.
- B. Install dielectric connections wherever jointing dissimilar metals.
- C. Install unions downstream of valves and at equipment or apparatus connections.
- D. Route piping parallel to building structure and maintain gradient.
- E. Install piping to maintain headroom. Group piping to conserve space. Group piping whenever practical at common elevations.
- F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- G. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
- H. Sleeve pipe passing through partitions, walls and floors. Provide 1" annular clear space between pipe and sleeve.
- I. Install piping system allowing clearance for installation of insulation and access to valves and fittings.
- J. Install identification on piping systems including underground piping. Refer to Section 23 05 00.
- K. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.
- L. Provide capped tee fittings upstream and downstream of all new gas pressure regulators which do not contain vent limiting devices.

3.4 INSTALLATION - VALVES

- A. Install valves with stems upright or horizontal, not inverted.
- B. Install ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.
- C. Install ball valves for throttling or manual flow control services.

3.5 INSTALLATION - PIPING SPECIALTIES

- A. Install pressure gauges with pulsation dampers. Provide needle valve or ball valve to isolate each gauge. Extend nipples and siphons to allow clearance from insulation.
- B. Install gauges in locations where they are easily read from normal operating level. Install vertical to 45 degrees off vertical.
- C. Adjust gauges to final angle, clean windows and lenses, and calibrate to zero.

3.6 INSTALLATION - FUEL PIPING

- A. Install natural gas piping in accordance with ASME B31.2 and ASME B31.4.
- B. Install natural gas piping in accordance with NFPA 54.
- C. Provide clearance for installation of insulation and access to valves and fittings.
- D. Establish elevations of buried piping outside building to provide not less than 1.5 ft of cover.
- E. Provide support for utility meters in accordance with requirements of utility company.
- F. Pipe vents from gas pressure reducing valves to outdoors and terminate in weatherproof hood.
- G. Test natural gas piping in accordance with NFPA 54.

3.7 INSTALLATION - PIPE HANGERS AND SUPPORTS

- A. Support horizontal piping as scheduled.
- B. Install hangers with minimum 1/2 inch space between finished covering and adjacent work.
- C. Place hangers within 12 inches of each horizontal elbow.
- D. Use hangers with 1-1/2 inch minimum vertical adjustment.
- E. Support horizontal cast iron pipe adjacent to each hub, with 5 feet maximum spacing between hangers.
- F. Support vertical piping at every [other] floor. Support vertical cast iron pipe at each floor at hub.
- G. Where piping is installed in parallel and at same elevation, provide multiple pipe or trapeze hangers.
- H. Support riser piping independently of connected horizontal piping.
- I. Provide copper plated hangers and supports for copper piping.
- J. Design hangers for pipe movement without disengagement of supported pipe.
- K. Prime coat exposed steel hangers and supports. [Refer to Section 09 90 00.] Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

3.8 SCHEDULES

SUPPORT OF PIPING

STEEL PIPE, NOMINAL SIZE OF PIPE (inches)	SPACING OF SUPPORTS (feet)		NOMINAL SIZE OF TUBING (SMOOTH WALL) (inch O.D.)	SPACING OF SUPPORTS (feet)
1/2	6		1/2	4
3/4 or 1	8		5/8 or 3/4	6
1 1/4 or larger (horizontal)	10		7/8 or 1 (horizontal)	8
1 1/4 or larger (vertical)	Every floor level		1 or larger (vertical)	Every floor level

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

SPECIFICATIONS FOR THREADING METALLIC PIPE

IRON PIPE SIZE (inches)	APPROXIMATE LENGTH OF THREADED PROTION (inches)	APPROXIMATE NUMBER OF THREAD TO BE CUT
$\frac{1}{2}$	$\frac{3}{4}$	10
$\frac{3}{4}$	$\frac{3}{4}$	10
1	$\frac{7}{8}$	10
1 $\frac{1}{4}$	1	11
1 $\frac{1}{2}$	1	11
2	1	11
2 $\frac{1}{2}$	1 $\frac{1}{2}$	12
≥ 3	welded	welded

For SI 1 inch = 25.4 mm.

Note 1: Refer to manufacturer's recommendations for grooved end piping systems.

END OF SECTION

SECTION 23 30 00

HVAC AIR DISTRIBUTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Ductwork.
 - 2. Ductwork accessories.
 - 3. Fans.
 - 4. Air Outlets.
 - 5. Filters.

1.2 SUBMITTALS

- A. Product Data:
 - 1. Submit sizes, capacities, materials, controls and connections to other work.
 - 2. Submit catalog performance ratings, construction, electric and duct connections, flashing and dimensions for fans and exhausters.
- B. Operation and Maintenance Data: Submit instructions for lubrication, motor and drive replacement, spare parts lists, and wiring diagrams.
- C. Manufacturer's Installation Instructions: Submit relevant instructions.

1.3 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit instructions for filter replacement, spare parts lists, and wiring diagrams.

1.4 QUALITY ASSURANCE

- A. Maintain one copy of each document on site.

PART 2 PRODUCTS

2.1 DUCTWORK

- A. Duct Materials:
 - 1. Manufacturers:
 - a. United McGill
 - b. Semco
 - c. Tangent Air
 - d. Substitutions: Permitted.
 - 2. Galvanized Steel Ducts: ASTM A653/A653M galvanized steel sheet, lock-forming quality, having G90 zinc coating of in conformance with ASTM A90/A90M.
 - 3. Steel Ducts: ASTM A1008/A1008M
 - 4. Fasteners: Rivets, bolts, or sheet metal screws.
 - 5. Hanger Rod: ASTM A36/A36M; steel , galvanized; threaded both ends, threaded one end, or continuously threaded.
- B. Ductwork Fabrication:
 - 1. Fabricate and support rectangular ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible and as indicated on Drawings. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
 - 2. Fabricate and support round ducts with longitudinal seams in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible (Round Duct Construction

Standards), and as indicated on Drawings. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.

3. Construct T's, bends, and elbows with minimum radius 1-1/2 times centerline duct width. Where not possible and where rectangular elbows are used, provide turning vanes. Where acoustical lining is indicated, furnish turning vanes of perforated metal with glass fiber insulation.
4. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
5. Fabricate continuously welded round and oval duct fittings two gages heavier than duct gages indicated in SMACNA Standard. Minimum 4 inch cemented slip joint, brazed or electric welded. Prime coat welded joints.
6. Provide standard 45-degree lateral wye takeoffs. When space does not allow 45-degree lateral wye takeoff, use 90-degree conical tee connections.
7. All ductwork to be constructed per SMACNA low pressure classification, 2.0"w.c. max. see table 6-1 of the IMC.
8. As a minimum all ductwork shall be sealed to SMACNA Class B.

C. Insulated Flexible Ducts:

1. Manufacturers:
 - a. Atco
 - b. Substitutions: Permitted.
2. Product Description: Two ply vinyl film supported by helical wound spring steel wire; fiberglass insulation; polyethylene or aluminized vapor barrier film.
 - a. Pressure Rating: 10 inches wg positive and 1.0 inches wg negative.
 - b. Maximum Velocity: 4000 fpm.
 - c. Temperature Range: -10 degrees F to 160 degrees F.
 - d. Thermal Resistance: 4.2 square feet-hour-degree F per BTU.
3. Product Description: UL 181, Class 1, aluminum laminate and polyester film with latex adhesive supported by helical wound spring steel wire; fiberglass insulation; polyethylene or aluminized vapor barrier film.
 - a. Pressure Rating: 10 inches wg positive and 1.0 inches wg negative.
 - b. Maximum Velocity: 4000 fpm.
 - c. Temperature Range: -20 degrees F to 210 degrees F.
 - d. Thermal Resistance: 4.2 square feet-hour-degree F per BTU.

D. Single Wall Spiral Round Ducts:

1. Manufacturers:
 - a. McGill AirFlow Corporation
 - b. Semco Incorporated
 - c. Tangent Air Corp.
 - d. Spiral Mfg. Co., Inc.
 - e. Substitutions: Permitted.
2. Product Description: UL 181, Class 1, round spiral lock seam duct constructed of galvanized steel.
3. Construct duct with the following minimum gages:

Diameter	Gage
----------	------

3 inches to 14 inches	26
15 inches to 26 inches	24
28 inches to 36 inches	22
38 inches to 50 inches	20
52 inches to 84 inches	18

4. Construct fittings with the following minimum gages:

Diameter	Gauge
3 inches to 14 inches	24
15 inches to 26 inches	22
28 inches to 36 inches	20
38 inches to 50 inches	20
52 inches to 60 inches	18
62 inches to 84 inches	16

- E. Transverse Duct Connection System:

1. Manufacturers:
 - a. Cedinor
 - b. Ductmate
 - c. Substitutions: Permitted.
2. Product Description: SMACNA "E" rated; SMACNA "F" rated or SMACNA "J" rated rigidity class connection, interlocking angle, and duct edge connection system with sealant, gasket, cleats, and corner clips.

2.2 DUCT ACCESSORIES

- A. Volume Control Dampers:

1. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated on Drawings.
2. Fabricate splitter dampers of material matching duct gage to 24 inches size in each direction, and two gages heavier for larger sizes. Secure with continuous hinge or rod. Operate with a minimum 1/4 inch diameter rod.
3. Fabricate single blade dampers for duct sizes to 12 x 30 inch.
4. Fabricate multi-blade damper of opposed blade pattern with maximum blade sizes 8 x 72 inch. Assemble center and edge crimped blades in prime coated or galvanized channel frame with suitable hardware.
5. Except in round ductwork 12 inches and smaller, furnish end bearings.
6. Furnish locking, indicating quadrant regulators on single and multi-blade dampers. Where width exceeds 30 inches, furnish regulator at both ends.

- B. Turning Devices:

1. Multi-blade device with blades aligned in short dimension; steel or aluminum construction; with individually adjustable blades, mounting straps.
2. Multi-blade device with radius blades attached to pivoting frame and bracket, steel or aluminum construction, with push-pull operator strap.

- C. Flexible Duct Connections:

1. UL listed fire-retardant neoprene coated woven glass fiber fabric to NFPA 90A, approximately 3 inches wide, crimped into metal edging strip.

- D. Duct Access Doors:
 - 1. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.
 - 2. Access doors smaller than 12 inches square secured with sash locks. Access doors with sheet metal screw fasteners are not acceptable.
- E. Motorized Dampers:
 - 1. Manufacturers:
 - a. Cesco
 - b. Greenheck
 - c. Nailor
 - d. Ruskin
 - e. Substitutions: Permitted.
 - 2. Actuator 24 volt. Provide 120v/24v transformer.
 - 3. Fabricate multi-blade, parallel blade dampers of galvanized steel, or extruded aluminum, with center pivoted blades, with sealed edges, linked together, steel ball bearings, and plated steel pivot pin.

2.3 FANS

- A. Upblast Centrifugal Roof Fans:
 - 1. Manufacturers:
 - a. Acme Engineering and Manufacturing Corp.
 - b. Greenheck Corp.
 - c. Loren Cook Company
 - d. Substitutions: Permitted.
 - 2. Fan Unit: Upblast type. V-belt drive, spun aluminum housing with grease tray; resilient mounted motor; aluminum wire bird screen; square base to suit roof curb with continuous curb gaskets.
 - 3. Sheaves: Cast iron or steel, dynamically balanced, bored to fit shafts and keyed; variable and adjustable pitch motor sheave selected so required rpm is obtained with sheaves set at mid-position; fan shaft with self-aligning pre-lubricated ball bearings.
 - 4. Motor: Totally enclosed fan cooled.
 - 5. Roof Curb: 24 inch high of galvanized steel construction with continuously welded seams, built-in cant strips, 1 inch insulation and curb bottom, ventilated double wall, hinged curb adapter, and factory installed nailer strip.
 - 6. Disconnect Switch: Factory wired, non-fusible, in housing for thermal overload protected motor NEMA 250 Type 1 enclosure.
- B. Ceiling Fans:
 - 1. Manufacturers:
 - a. Acme Engineering and Manufacturing Corp.
 - b. Greenheck Corp.
 - c. Loren Cook Company
 - d. Substitutions: Permitted.
 - 2. Centrifugal Fan Unit: Direct driven with injection molded resin or galvanized steel housing lined with 1/2 inch acoustic insulation, resilient mounted motor, gravity backdraft damper in discharge opening, integral outlet duct collar. Disconnect Switch: Cord and plug in housing for thermal overload protected motor.

3. Grille: Molded white plastic.
4. Wheel: Centrifugal forward curved type constructed of injection molded or polypropylene resin.
5. Motor: Open drip proof type with permanently lubricated sealed bearings and thermal overload protection.
6. Accessories:
 - a. Wall cap with damper, round duct inlet.
 - b. Fan mounted speed controller.

2.4 AIR OUTLETS AND INLETS

- A. Manufacturers:
 1. Price
 2. Krueger
 3. Titus
 4. Tuttle and Bailey
 5. Substitutions: Permitted.
- B. Ceiling Diffusers: Square, stamped or spun, multi-core type diffuser to discharge air in 360 degree pattern, with sectoring baffles where indicated; baked enamel off-white finish.
- C. Sidewall Registers: Streamlined and individually adjustable blades, one-way deflection, with factory prime coat finish.
- D. Return Grilles: Ceiling mounted, egg crate type.

2.5 FILTERS

- A. Manufacturers: as provided with equipment.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify sizes of equipment connections before fabricating transitions.
- B. Verify rated walls are ready for fire damper installation.
- C. Verify ducts and equipment installations are ready for accessories.
- D. Check location of air outlets and inlets and make necessary adjustments in position to conform to architectural features, symmetry, and lighting arrangement.

3.2 INSTALLATION

- A. Metal Ducts: Install in accordance with SMACNA Duct Construction Standards - Metal and Flexible.
- B. All longitudinal and transverse joints, seams, and connections of supply and return ducts operating at a static pressure less than 2.0" w.g. shall be securely fastened and sealed with welds, gaskets, mastics (adhesives), mastic-plus-embedded-fabric systems or tapes installed in accordance with manufacturer's installation instructions.
- C. Connect flexible ducts to metal ducts with liquid adhesive plus tape or draw bands.
- D. Use crimp joints with or without bead for joining round duct sizes 8 inches and smaller with crimp in direction of airflow.
- E. Install flexible connections immediately adjacent to fans and motorized equipment. Install flexible connections specified between fan inlet and discharge ductwork. Prevent flexible connectors being in tension while running.
- F. Install back-draft dampers on discharge of exhaust fans and as indicated on Drawings.

- G. Prevent passage of unfiltered air around filters by installing felt, rubber, or neoprene gaskets.
- H. Cut openings in ductwork to accommodate thermometers and controllers. Cut pitot tube openings for testing of systems, complete with metal can with spring device or screw to eliminate against air leakage.
- I. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities. Apply duct insulation specified in Section 23 07 00.
- J. During construction install temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.
- K. Access Doors: Install access doors at the following locations and as indicated on Drawings:
 - 1. Upstream of each reheat coil.
 - 2. Before and after each duct mounted filter.
 - 3. Before and after each duct mounted coil.
 - 4. Before and after each duct mounted fan.
 - 5. Before and after each automatic control damper.
 - 6. Before and after each fire damper, smoke damper and/or combination fire and smoke damper.
 - 7. Downstream of each VAV box.
 - 8. Install at locations for cleaning kitchen exhaust ductwork in accordance with NFPA 96.
- L. Access Door Sizes: Install minimum 12 x 12 inch size. Review locations prior to fabrication.
- M. Install balancing dampers on duct take-off to diffusers and grilles and registers, regardless of whether dampers are specified as part of diffuser, or grille and register assembly.
- N. Do not operate fans until ductwork is clean, filters are in place, bearings lubricated, and fan has been test run under observation.
- O. Install fans with resilient mountings and flexible electrical leads.
- P. Install sheaves required for final air balance.
- Q. Install safety screen where fan inlet or outlet is exposed.
- R. Fire and smoke dampers shall be provided with an approved means of access, large enough to permit inspection and maintenance of the damper and its operating parts. The access shall not affect the integrity of fire-resistance-rated assemblies. Access points shall be permanently identified on the exterior by a label having letters not less than 0.5" in height reading: "FIRE/SMOKE DAMPER, SMOKE DAMPER or FIRE DAMPER. Access doors in ducts shall be tight fitting and suitable for the required duct construction.

END OF SECTION

SECTION 23 54 00

FURNACES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Forced air furnaces with refrigerant cooling coils, and condensing units.

1.2 SUBMITTALS

- ###### **A. Product Data:** Submit dimensions, connections, arrangement, accessories, capacities, manufacturer's installation instructions and controls.

1.3 CLOSEOUT SUBMITTALS

- ###### **A. Operation and Maintenance Data:** Submit spare parts lists.

1.4 QUALITY ASSURANCE

- ###### **A. Furnace Performance Requirements:** Conform to minimum efficiency prescribed by ASHRAE 90.1-2010 when tested in accordance with DOE 10 CFR.

- ###### **B. Cooling Performance Requirements:** Energy Efficiency Rating (EER) not less than prescribed by ASHRAE 90.1-2010 when used in combination with compressors and evaporator coils when tested in accordance with ARI 210/240.

- ###### **C. Maintain one copy of each document on site.**

1.5 WARRANTY

- ###### **A. Furnish one year manufacturer warranty for heat exchangers and refrigeration compressors.**

PART 2 PRODUCTS

2.1 FORCED AIR FURNACES

A. Manufacturers:

1. Carrier Corp.
2. The Trane Company
3. Substitutions: Permitted

- ###### **B. Units:** Self-contained, packaged, factory assembled, pre-wired unit consisting of cabinet, supply fan, heating element, controls, air filter, humidifier, and accessories; wired for single power connection with control transformer.

1. Air Flow Configuration: upflow
2. Heating: Natural gas fired
3. Electric Refrigeration: Refrigerant cooling coil and outdoor package containing compressor, condenser coil and condenser fan.
4. Accessories: Roof termination kit.

- ###### **C. Cabinet:** Steel with baked enamel finish and access doors with safety interlock switch.

- ###### **D. Supply Fan:** Centrifugal type rubber mounted with direct or belt drive, adjustable variable pitch motor pulley, motor.

- ###### **E. Heat Exchanger:** Aluminized steel.

F. Gas Burner:

1. Atmospheric type with adjustable combustion air supply.

2. Gas valve capable of 100 percent safety gas shut-off; 24 volt combining pressure regulation, safety pilot, manual set (On-Off), pilot filtration, automatic electric valve.
3. Electronic pilot ignition, with hot surface igniter.
- G. Furnace Operating Controls:
 1. Room Thermostat: Cycles burner to maintain room temperature setting.
 2. Supply Fan Control: Energize from bonnet temperature independent of burner controls, with adjustable timed off delay and fixed timed on delay, with manual switch for continuous fan operation.
- H. Air Filters: 1 inch (25 mm) thick glass fiber, disposable type.
- I. Furnace Refrigeration Package:
 1. Evaporator Coil: Copper tube aluminum fin assembly, galvanized drain pan, drain connection, refrigerant piping connections, restricted distributor or thermostatic expansion valve, steel cabinet with baked enamel finish and insulation.
 2. Compressor: Hermetic, 3600 rpm, resiliently mounted integral with condenser, with positive lubrication, crankcase heater, high pressure control, motor overload protection, service valves and drier. Include time delay control to prevent short cycling.
 3. Refrigeration Accessories: Filter Drier, high-pressure switch (manual reset), low pressure switch (automatic reset), service valves and gauge ports, and thermometer well (in liquid line). Furnish thermostatic expansion valves. Furnish refrigerant lines, factory cleaned, dried, pressurized and sealed, with insulated suction line.
 4. Air Cooled Condenser: ARI 520; aluminum fin and copper tube coil, with direct drive axial propeller fan resiliently mounted, galvanized fan guard.
 5. Refrigeration Operating Controls:
 - a. Room Thermostat: Cycles condensing unit and supply fan to maintain room temperature setting.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install in accordance with NFPA 54
- B. Mount counter flow furnaces installed on combustible floors on additive base.
- C. Install drain piping from cooling coils to nearest floor drain.
- D. Install refrigerant piping to remote condenser.
- E. Connect natural gas piping to supply.
- F. Mount air cooled condenser-compressor package on 4" concrete pad.
- G. Install flexible duct connections on inlet and outlet of furnaces.

END OF SECTION

SECTION 26 05 00

COMMON WORK RESULTS FOR ELECTRICAL

PART 1 GENERAL

1.1 SCOPE

- A. This section includes administrative items related to submittals, permits, substitutions, owner training, project closeout, and general requirements for performance of work by the Division 26 contractor. Reference Division 1 for other requirements.

1.2 SUBMITTAL REQUIREMENTS – DIVISION 26

- A. Engineer will commence review only when all Division 26 submittals have been received, due to interrelations between different sections. Review may be delayed if certain other related divisions have not been received, for example elevators or HVAC equipment.
- B. Organize submittals by section and name files with section number and title.
- C. All data required for review must be contained in the files provided to the Engineer. Links to manufacturer's websites will not be accepted.
- D. Re-submittals must contain markups that clearly delineate the changed items. Engineer will not re-review the entire submittal package in order to find the changes.
- E. Electronic submittals (pdf format) are preferred and can be reviewed faster. Paper submittals will also be accepted, but mixed format submittals are not acceptable.
- F. No fabrication or work which requires submittals shall begin until submittals are returned with the Engineer's approval.
- G. The Contractor shall coordinate each submittal with the requirements of the Work and of the Contract Documents. In the event that significant deviations are necessary between the submittals and the Contract Documents, he shall notify the Engineer in writing at the time of submission.
- H. The Contractor shall visit the project site, verify dimensions and existing conditions as far as possible without beginning work, and coordinate submittals accordingly. In the event that significant deviations are found between the existing conditions and the Contract Documents, he shall notify the Engineer in writing at the time of submission.
- I. Engineer's review does not constitute acceptance or responsibility for accuracy of dimensions, and will not relieve the Contractor from responsibility for errors or omissions in the Shop Drawings.
- J. Engineer's review does not relieve the Contractor of any requirements in the Contract Documents, nor shall it constitute approval of any deviation from the Contract Documents, unless such deviations are specifically stated by the Engineer in the submittal review.

1.3 PERMITS

- A. Permits necessary for the performance of the work under this contract shall be secured and paid for by the Contractor. Final inspection by the Engineer will not be made or certificate of final payment issued until certificates of satisfactory inspection from the inspection authorities are delivered. Reference Division 1 for permit requirements.

1.4 TRAINING

- A. The electrical contractor shall conduct a 4 hour minimum training session with owner's designated staff to review all electrical equipment installed under this contract. At a minimum, the session will include operation and maintenance, programming, and basic operation of the systems.
- B. Contractor shall physically demonstrate the operation of each piece of equipment.
- C. A sign in sheet and agenda indicating a list of all equipment reviewed shall be included in the close out documents.

PART 2 DIVISION 26 SCOPE

2.1 ELECTRICAL WIRING AND CONTROL EQUIPMENT

- A. All line voltage wiring and conduit systems required by any Division shall be the responsibility of the Division 26 contractor. Every attempt will be made to reflect these requirements on the electrical sheets, but it is the Division 26 contractor's responsibility to obtain a complete drawing set, familiarize himself with the complete project scope, and coordinate with other Divisions.
- B. Responsibilities of the Division 26 contractor include but are not limited to:
 - 1. Installation and wiring of variable frequency drives (VFDs furnished by Division 23, startup and programming of VFDs shall be by VFD manufacturer's representative)
 - 2. Wiring to duct smoke detectors, including signal wiring to fire alarm system
 - 3. Wiring to fire/smoke dampers, including signal wiring and provision of disconnecting means at dampers
 - 4. Raceways for control circuits in all Divisions
 - 5. Field wiring of motor overload protection and starters (where required by equipment manufacturer)
 - 6. Field wiring of integral transformers in equipment (where required by equipment manufacturer)
- C. The Division 26 Contractor must coordinate with the Division 23 Contractor regarding the requirements of electrical control components. Any changes or additions required due to the specific nature of equipment furnished shall be the complete responsibility of the Contractor furnishing the equipment.
- D. The Division 26 Contractor must coordinate with the Division 23 Contractor to ensure that all required components of control systems are included and fully understood. The Owner shall not incur any additional cost as a result of lack of such coordination.

PART 3 EXECUTION

3.1 EXISTING CONDITIONS

- A. The Contractor shall carefully examine the drawings and specifications, visit the site of the work, fully inform himself as to all existing conditions, dimensions and limitations before starting work.
- B. If discrepancies are found between existing conditions and Contract Documents, Contractor shall notify Engineer for direction before proceeding. No claim for additional cost or time extension will be allowed without proper notice plus prior determination of time and cost to the owner.
- C. If existing active or non-active services (which are not shown on plans) are encountered that require relocation or disconnection, the Contractor shall notify the Engineer for a decision on proper handling of these services. The Contractor shall not proceed with the work until so authorized.
- D. Damage to existing improvements caused by the contractor or a party to the contractor during the demolition or construction phase shall be repaired prior to contract date of substantial completion at no additional expense to the owner.

3.2 PERFORMANCE OF NEW WORK

- A. Provide, install, and coordinate all Division 26 work indicated by Contract Documents. This consists of furnishing all labor, equipment, supplies and materials in addition to performing all operations including cutting, channeling and underground trenching, back fill and tamping necessary for the installation of complete power, lighting, or other systems as shown.
- B. Perform all electrical work in a neat and workmanlike manner in full compliance with all applicable, adopted codes; including, but not limited to: the national electrical code (NEC), UBC, IBC, NFPA, and ADA. all local and state requirements will be observed during the performance of this work.
- C. If any if discrepancies are found between Contract Documents and any associated legal or safety requirements, Contractor shall notify Engineer in writing. The Engineer will modify the Contract Documents as required. If the Contractor proceeds with any work he knows to be in variance of legal or safety requirements, the Contractor will assume all responsibility for this work. He will promptly correct the work when notified, without additional cost to the Owner.
- D. Coordinate all phases of the electrical work with the Architect and General Contractor. Schedule

work to minimize disruption and inconvenience to the Owner.

- E. Obtain from system suppliers all wiring diagrams for all equipment and ensure that manufacturer's electrical requirements are met. Any incorrect wiring or devices installed by Contractor without the wiring diagram shall be corrected at Contractor's expense.
- F. Obtain permission from Structural Engineer before drilling or cutting structural members.
- G. Contact utility companies (power, gas, water, sewer, telephone, cable tv, etc.) prior to trenching in order to identify underground utilities. Contractor shall locate secondary service feeders, underground electrical branch circuits, sprinkler lines, etc., prior to trenching. Any cut or damaged underground utilities shall be repaired or replaced at Contractor's expense.
- H. When installing service equipment or metering equipment, coordinate with utility company to ensure that their standards are being met. If any discrepancy is found between utility standards and Contract Documents, notify Engineer for direction.
- I. Coordinate exact locations of electrical components and connections:
 - 1. Where devices are shown in casework, coordinate exact locations with architectural casework details prior to rough-in.
 - 2. Verify final locations of all sinks with the plumbing contractor prior to rough-in of nearby electrical devices. Any above counter electrical devices found within 8" of a sink, and any disposal receptacles found outside the under-sink space, shall be relocated at electrical contractor's expense.
 - 3. The owner reserves the right to relocate any electrical device up to a distance of 12", prior to installation, without additional charge.
 - 4. Coordinate the exact location of equipment requiring electrical connections with other trades prior to rough in. Where there is a question of adequate clearance or coordination between trades, Contractor will submit dimensioned drawings for Engineer's review prior to rough in.

3.3 ELECTRICAL PROJECT CLOSE OUT REQUIREMENTS

- A. Before substantial completion can be granted, the following items must be completed:
 - 1. AHJ inspection shall be completed and work approved
 - 2. All Division 26 equipment shall be installed and connected
 - 3. All Division 26 systems shall be online, tested, adjusted and calibrated
 - 4. Engineer's substantial completion inspection shall be performed
- B. Prior to consideration of Final Payment, the Contractor shall:
 - 1. Provide typed panel directories installed in each panelboard. Directories shall not be printed from drawings unless all circuiting is identical to that shown in drawings.
 - 2. Have all electrical equipment labeled per requirements in 26 05 53
 - 3. Provide Record As-Built Drawings to Engineer. As-Built Drawings shall consist of clear, legible markups of the Contract Documents indicating the following:
 - a. Any installed circuiting that deviates from circuiting on plan
 - b. Any equipment size or locations that deviate from plan
 - c. Any other significant deviations from design
 - 4. Provide copies of permits and/or inspection certificates.
 - 5. Provide Operating and Maintenance Manual(s).
 - 6. Return keys to the Owner.
 - 7. Deliver all spare parts.
 - 8. Touch up any damaged finishes.
 - 9. Clean all affected electrical equipment and systems as needed to remove construction

debris such as paint, dust, grease, etc.

10. Remove all existing equipment labels that are no longer accurate.

END OF SECTION

SECTION 260519

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Copper building wire rated 600 V or less.
 - 2. Aluminum building wire rated 600 V or less.
 - 3. Metal-clad cable, Type MC, rated 600 V or less.
 - 4. Connectors, splices, and terminations rated 600 V and less.
- B. Related Requirements:
 - 1. Section 260513 "Medium-Voltage Cables" for single-conductor and multiconductor cables, cable splices, and terminations for electrical distribution systems with 601 to 35,000 V.
 - 2. Section 260523 "Control-Voltage Electrical Power Cables" for control systems communications cables and Classes 1, 2, and 3 control cables.
 - 3. Section 271500 "Communications Horizontal Cabling" for cabling used for voice and data circuits..

1.2 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

PART 2 - PRODUCTS

2.1 COPPER BUILDING WIRE

- A. Description: Flexible, insulated and uninsulated, drawn copper current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V or less.
- B. Standards:
 - 1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
 - 2. RoHS compliant.
 - 3. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."
- C. Conductors: Copper, complying with ASTM B 3 for bare annealed copper and with ASTM B 8, and ASTM B 496 for stranded conductors.
- D. Conductor Insulation:
 - 1. Type NM: Comply with UL 83 and UL 719.
 - 2. Type RHH and Type RHW-2: Comply with UL 44.
 - 3. Type USE-2 and Type SE: Comply with UL 854.
 - 4. Type THHN and Type THWN-2: Comply with UL 83.
 - 5. Type THW and Type THW-2: Comply with NEMA WC-70/ICEA S-95-658 and UL 83.
 - 6. Type XHHW-2: Comply with UL 44.

2.2 ALUMINUM BUILDING WIRE

- A. Description: Flexible, insulated and uninsulated, drawn aluminum current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V or less.
- B. Standards:
 - 1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.

2. RoHS compliant.
3. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."
- C. Conductors: Aluminum, complying with ASTM B 800 and ASTM B 801.
- D. Conductor Insulation:
 1. Type NM: Comply with UL 83 and UL 719.
 2. [Type RHH] [and] [Type RHW-2]: Comply with UL 44.
 3. [Type USE-2] [and] [Type SE]: Comply with UL 854.
 4. [Type THHN] [and] [Type THWN-2]: Comply with UL 83.
 5. [Type THW] [and] [Type THW-2]: Comply with NEMA WC-70/ICEA S-95-658 and UL 83.
 6. Type XHHW-2: Comply with UL 44.
 7. <Insert Type and standard>.

2.3 METAL-CLAD CABLE, TYPE MC

- A. Description: A factory assembly of one or more current-carrying insulated conductors in an overall metallic sheath.
- B. Standards:
 1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
 2. Comply with UL 1569.
 3. RoHS compliant.
 4. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."
- C. Circuits:
 1. [Single circuit and multicircuit with color-coded conductors.
 2. Power-Limited Fire-Alarm Circuits: Comply with UL 1424.
- D. Conductors: Copper, complying with ASTM B 3 for bare annealed copper and with ASTM B 8 for stranded conductors
- E. Ground Conductor: Bare.
- F. Conductor Insulation:
 1. Type TFN/THHN/THWN-2: Comply with UL 83.
 2. Type XHHW-2: Comply with UL 44.
- G. Armor: Aluminum, interlocked.
- H. Jacket: PVC applied over armor.

2.4 CONNECTORS AND SPLICES

- A. Description: Factory-fabricated connectors, splices, and lugs of size, ampacity rating, material, type, and class for application and service indicated; listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
- B. Jacketed Cable Connectors: For steel and aluminum jacketed cables, zinc die-cast with set screws, designed to connect conductors specified in this Section.
- C. Lugs: One piece, seamless, designed to terminate conductors specified in this Section.
 1. Material: Aluminum.
 2. Type: One hole with **standard** barrels.
 3. Termination: Compression.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

- A. Feeders: Copper; solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Feeders: Copper for feeders smaller than No. 4 AWG; copper or aluminum for feeders No. 4 AWG and larger. Conductors shall be solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- C. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- D. Branch Circuits: Copper. Solid for No. 12 AWG and smaller; stranded for No. 10 AWG and larger.
- E. Power-Limited Fire Alarm and Control: Solid for No. 12 AWG and smaller.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

- A. Service Entrance: Type XHHW-2, single conductors in raceway.
- B. Exposed Feeders: Type THHN/THWN-2, single conductors in raceway.
- C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspace: Nonmetallic-sheathed cable, Type NM.
- D. Exposed Branch Circuits, Including in Crawlspace: Nonmetallic-sheathed cable, Type NM.
- E. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Nonmetallic-sheathed cable, Type NM.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

- A. Conceal cables in finished walls, ceilings, and floors unless otherwise indicated.
- B. Complete raceway installation between conductor and cable termination points according to Section 260533 "Raceways and Boxes for Electrical Systems" prior to pulling conductors and cables.
- C. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- E. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- F. Support cables according to Section 260529 "Hangers and Supports for Electrical Systems."

3.4 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.
- B. Make splices, terminations, and taps that are compatible with conductor material.
 - 1. Use oxide inhibitor in each splice, termination, and tap for aluminum conductors.
- C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches of slack.

3.5 IDENTIFICATION

- A. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."
- B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

3.6 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Section 260544 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

3.7 FIRESTOPPING

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Section 078413 "Penetration Firestopping."

END OF SECTION 260519

SECTION 26 05 26
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes grounding and bonding systems and equipment.
 - a. Grounding connections for separately derived systems.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location, environmental conditions, and application.
- B. Comply with UL 467 for grounding and bonding materials and equipment.

2.2 CONDUCTORS

- A. Grounding and bonding conductor sizes: As specified in Contract Drawings, or larger.
- B. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- C. Bare Copper Conductors:
 - 1. Solid Conductors: ASTM B 3.
 - 2. Stranded Conductors: ASTM B 8.
 - 3. Tinned Conductors: ASTM B 33.

2.3 CONNECTORS

- A. All grounding and bonding connectors: Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.
- B. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
- C. Bus-Bar Connectors:
 - 1. Mechanical type, cast silicon bronze, solderless compression or exothermic-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.
 - 2. Compression type, copper or copper alloy, with two wire terminals.
- D. Beam Clamps: Mechanical type, terminal, ground wire access from four directions, with dual, tin-plated or silicon bronze bolts.
- E. Cable-to-Cable Connectors: Compression type, copper or copper alloy.
- F. Cable Tray Ground Clamp: Mechanical type, zinc-plated malleable iron.
- G. Conduit Hubs: Mechanical type, terminal with threaded hub.
- H. Ground Rod Clamps: Mechanical type, copper or copper alloy.
- I. Straps: Solid copper, cast-bronze clamp or copper lugs. Rated for 600 A.
- J. U-Bolt Clamps: Mechanical type, copper or copper alloy, terminal listed for direct burial.
- K. Water Pipe Clamps:
 - 1. Mechanical type, two pieces with zinc-plated or stainless-steel bolts. Tin-plated aluminum or Die-cast zinc alloy, listed for direct burial.
 - 2. U-bolt type with malleable-iron clamp and copper ground connector rated for direct burial.

2.4 GROUNDING ELECTRODES

- A. Ground Rods: Copper-clad steel; size and spacing per Construction Drawings.

- B. Ground Plates: 1/4 inch (6 mm) thick, hot-dip galvanized.

PART 3 - EXECUTION

3.1 APPLICATIONS

- A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger unless otherwise indicated.
- B. Underground Grounding Conductors: Bury at least 24 inches (600 mm) below grade.
- C. Grounding Bus (if specified in Construction Drawings): Install in electrical equipment rooms, in rooms housing service equipment, and elsewhere as indicated.
1. Install bus horizontally, on insulated spacers 2 inches (50 mm) minimum from wall, 6 inches (150 mm) above finished floor unless otherwise indicated.
 2. Where indicated on both sides of doorways, route bus up to top of door frame, across top of doorway, and down; connect to horizontal bus.
 3. Connect to service grounding electrode.
- D. Conductor Terminations and Connections:
1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
 2. Underground Connections: Welded connectors except at test wells.
 3. Connections to Ground Rods at Test Wells: Bolted connectors.
 4. Connections to Structural Steel: Welded connectors.

3.2 EQUIPMENT GROUNDING

- A. Install wire-type equipment grounding conductors with all feeders and branch circuits.
- B. Conduit or cable sheath is not allowed to be used as an equipment grounding conductor, unless explicitly called for or allowed in a particular location on Construction Drawings.
- C. Where current carrying conductors are increased in size to mitigate voltage drop, the wire type equipment grounding conductor must also be increased by the same percentage in cross sectional area (per NEC 250).
- D. Patient Care Areas (where applicable) meet grounding requirements of NFPA 99 and NFPA 70.
- E. Poles Supporting Outdoor Lighting Fixtures:
1. If the pole structure is supplied by only a single branch circuit, a separate grounding electrode (rod) is not required. Bond the equipment grounding conductor of the supply circuit to pole base rebar and exposed metallic pole components.
 2. If the pole structure is supplied by multiple branch circuits, install an 8 ft ground rod at the pole, and bond to pole base rebar, exposed metallic pole components, and equipment grounding conductors of all supply circuits.
 3. If the above is not possible due to site conditions, contractor shall submit RFI to Engineer for direction. Owner shall not be responsible for any added cost incurred if alternate grounding strategies are installed without Engineer's direction.

3.3 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code (for example, equipment grounding conductors for circuits must follow the same path as the circuit). Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Ground Bonding Common with Lightning Protection System (where applicable): Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system. Bond electrical power system ground directly to lightning protection system grounding conductor at closest point to electrical service grounding electrode. Use bonding conductor sized same as system grounding electrode conductor, and install in conduit.

- C. Interconnect ground rods with conductors below grade unless otherwise indicated. Make connections without exposing steel or damaging coating if any.
- D. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.
 - 1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
 - 2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
 - 3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.
- E. Grounding and Bonding for Piping:
 - 1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building (if present). Connect grounding conductors to main metal water service pipes; use a bolted clamp connector or bolt a lug-type connector to a pipe flange by using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
 - 2. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.
 - 3. If dielectric fittings are present in interior piping, submit RFI for direction before bonding.
 - 4. Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.

3.4 FIELD QUALITY CONTROL

- A. Tests and Inspections:
 - 1. For all grounding connections: inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
 - 2. At each location where a maximum ground-resistance level was specified on Construction Drawings: test ground resistance and provide test report to Engineer as part of Closeout Documents.
 - a. Measure ground resistance no fewer than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
 - b. Perform tests by fall-of-potential method according to IEEE 81.
 - c. If resistance to ground exceeds specified values, notify Engineer promptly and include recommendations to reduce resistance.

END OF SECTION 26 05 26

SECTION 26 05 29

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Steel slotted support systems.
 - 2. Conduit and cable support devices.
 - 3. Support for conductors in vertical conduit.
 - 4. Structural steel for fabricated supports and restraints.
 - 5. Mounting, anchoring, and attachment components, including powder-actuated fasteners, mechanical expansion anchors, concrete inserts, clamps, through bolts, toggle bolts, and hanger rods.
 - 6. Supports for roof conduit.
 - 7. Fabricated metal equipment support assemblies.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Preformed steel channels and angles with minimum 13/32-inch- (10-mm-) diameter holes at a maximum of 8 inches (200 mm) o.c. in at least one surface.
 - 1. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
 - 2. Channel Width: Selected for applicable load criteria.
 - 3. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
 - 4. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
 - 5. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
 - 6. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Conduit and Cable Support Devices: hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- C. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for nonarmored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be made of malleable iron.
- D. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M steel plates, shapes, and bars; black and galvanized.
- E. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
 - 1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used. Where applicable, verify suitability for use in lightweight concrete or slabs less than 4 inches thick.
 - 2. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated or stainless steel, for use in hardened portland cement concrete, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
 - 3. Concrete Inserts: Steel or malleable-iron, slotted support system units are similar to MSS Type 18 units and comply with MFMA-4 or MSS SP-58.
 - 4. Clamps for Attachment to Steel Structural Elements: MSS SP-58 units are suitable for attached structural element.
 - 5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
 - 6. Toggle Bolts: All or Stainless-steel springhead type.

7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

- A. Description: Welded or bolted structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
- B. Performance: Where custom supports are fabricated for the project, Contractor is responsible for calculation of load and strength required. Submit RFI to Structural Engineer for direction if required.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Comply with the following standards for application and installation requirements of hangers and supports, except where requirements on Drawings or in this Section are stricter:
 1. NECA 1.
 2. Steel conduit: NECA 101
 3. Aluminum conduit: NECA 102.
 4. Metal cable tray systems: NECA 105.
 5. Nonmetallic cable tray systems: NECA 111.
- B. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
 1. Secure raceways and cables to these supports with two-bolt conduit clamps, or single-bolt conduit clamps, or single-bolt conduit clamps using spring friction action for retention in support channel.
- C. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch (38-mm) and smaller raceways serving branch circuits and communication systems above suspended ceilings, and for fastening raceways to trapeze supports.

3.2 SUPPORT INSTALLATION

- A. Raceway Support Methods: In addition to methods described in NECA 1, EMT, IMC and RMC may be supported by openings through structure members, according to NFPA 70.
- B. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
 1. To Wood: Fasten with lag screws or through bolts.
 2. To New Concrete: Bolt to concrete inserts.
 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
 4. To Existing Concrete: Expansion anchor fasteners. Drill holes for expansion anchors in concrete at locations and to depths that avoid the need for reinforcing bars.
 5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.
 6. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts, or Beam clamps (MSS SP-58, Type 19, 21, 23, 25, or 27), complying with MSS SP-69, or Spring-tension clamps.
 7. To Light Steel: Sheet metal screws.
 8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks securely attached to substrate. Install sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.
- C. Do not fasten supports to pipes, ducts, mechanical equipment, or other conduit.
- D. Obtain permission from Structural Engineer before drilling or cutting structural members.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

- A. Comply with installation requirements in applicable structural specification sections for site-fabricated metal supports.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- C. Field Welding: Comply with AWS D1.1/D1.1M.

END OF SECTION 26 05 29

SECTION 26 05 53
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Color and legend requirements for raceways, conductors, and warning labels and signs.
 2. Labels and Signs.
 3. Bands and tubes.
 4. Tapes and stencils.
 5. Tags.
 6. Paint for identification.
 7. Cable Ties and fasteners for labels and signs.

1.2 IDENTIFICATION REQUIRED

- A. EQUIPMENT:
1. Voltage designation for each piece of electrical distribution equipment.
 2. Nameplate for each piece of electrical distribution equipment, using name as shown on Construction Drawings.
 3. Nameplate for each piece of control equipment, indicating system and function.
 4. Emergency instructions or warning labels as specified in Construction Drawings, or required by Authority Having Jurisdiction.
- B. RACEWAYS:
1. Identify all conduit runs longer than 6 feet.
 2. Install bands at changes in direction, at penetrations of walls and floors (each side), at junction boxes and terminations, and straight runs.
 3. Identification spacing: at 50-foot (15-m) maximum intervals in straight runs, and at 20-foot (7.6-m) maximum intervals in congested areas.
- C. UNDERGROUND:
1. Install underground-line warning tape for power, lighting, communication, and control wiring and optical-fiber cable.
- D. BOXES:
1. Identify the covers of each junction and pull box with voltage, circuit number, and emergency power designation where applicable.
- E. CONDUCTORS:
1. Identify each power conductor at panelboard gutters, pull boxes, and outlet and junction boxes.
 2. Identify each control-circuit conductor in pull and junction boxes, manholes, handholes, and terminations, with the conductor or cable designation, origin, and destination.
- F. WORKING SPACE: In unfinished and utility spaces only, apply floor marking tape or tape and stencil to finished surfaces showing working clearances, labeled "KEEP CLEAR". Workspace shall comply with NFPA 70.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 PRODUCT PERFORMANCE REQUIREMENTS

- A. Comply with NFPA 70 and NFPA 70E.
- B. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- C. Comply with ANSI Z535.4 for safety signs and labels.
- D. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.
- E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes. Temperature Change: 100 deg F (67 deg C), ambient; 150 deg F (100 deg C), material surfaces.

2.2 PRODUCT COLOR AND LEGEND REQUIREMENTS

- A. Color-Coding for Phase- and Voltage-Level Identification, 600 V or Less: Use colors listed below for ungrounded service feeder and branch-circuit conductors.
 - 1. Color shall be factory applied or field applied for sizes larger than No. 8 AWG if authorities having jurisdiction permit.
 - 2. Colors for 208/120-V Circuits:
 - a. Phase A: Black.
 - b. Phase B: Red.
 - c. Phase C: Blue.
 - 3. Colors for 240-V Circuits:
 - a. Phase A: Black.
 - b. Phase B: Red.
 - 4. Colors for 480/277-V Circuits:
 - a. Phase A: Brown.
 - b. Phase B: Orange.
 - c. Phase C: Yellow.
 - 5. Color for Neutral: White or gray.
 - 6. Color for Equipment Grounds: Bare copper, Green, Green with a yellow stripe.
 - 7. Colors for Isolated Grounds: Green with white stripe.
- B. Warning Label Colors:
 - 1. Identify system voltage with black letters on an orange background.
- C. Equipment Identification Labels:
 - 1. Black letters on a white field, or vice versa.

2.3 LABELING PRODUCTS

- A. Vinyl Wraparound Labels: Preprinted, flexible labels laminated with a clear, weather- and chemical-resistant coating and matching wraparound clear adhesive tape for securing label ends.
- B. Snap-around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeves, with diameters sized to suit diameter and that stay in place by gripping action.
- C. Self-Adhesive Wraparound Labels: Preprinted, 3-mil- (0.08-mm-) thick, flexible label with acrylic pressure-sensitive adhesive.
 - 1. Self-Lamination: Clear; UV-, weather- and chemical-resistant; self-laminating, protective shield over the legend. Labels sized such that the clear shield overlaps the entire printed legend.
- D. Self-Adhesive Labels: Polyester, Vinyl, thermal, transfer-printed, 3-mil- (0.08-mm-) thick, multicolor, weather- and UV-resistant, pressure-sensitive adhesive labels, configured for intended use and location.
 - 1. Minimum Nominal Size:

- a. 1-1/2 by 6 inches (37 by 150 mm) for raceway and conductors.
- b. 3-1/2 by 5 inches (76 by 127 mm) for equipment.
- c. As required by authorities having jurisdiction.

2.4 BANDS AND TUBE PRODUCTS

- A. Snap-around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeves, 2 inches (50 mm) long, with diameters sized to suit diameter and that stay in place by gripping action.
- B. Heat-Shrink Preprinted Tubes: Flame-retardant polyolefin tubes with machine-printed identification labels, sized to suit diameters of and shrunk to fit firmly around item being identified. Full shrink recovery occurs at a maximum of 200 deg F (93 deg C). Comply with UL 224.

2.5 TAPE AND STENCIL PRODUCTS

- A. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.
- B. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; not less than 3 mils (0.08 mm) thick by 1 to 2 inches (25 to 50 mm) wide; compounded for outdoor use.
- C. Tape and Stencil: 4-inch- (100-mm-) wide black stripes on 10-inch (250-mm) centers placed diagonally over orange background and is 12 inches (300 mm) wide. Stop stripes at legends.
- D. Floor Marking Tape: 2-inch- (50-mm-) wide, 5-mil (0.125-mm) pressure-sensitive vinyl tape, with black and white or yellow and black stripes and clear vinyl overlay.
- E. Underground-Line Warning Tape:
 1. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical and communications utility lines.
 2. Printing on tape shall be permanent and shall not be damaged by burial operations.
 3. Tape material and ink shall be chemically inert and not subject to degradation when exposed to acids, alkalis, and other destructive substances commonly found in soils.
 4. Color and Printing:
 - a. Comply with ANSI Z535.1, ANSI Z535.2, ANSI Z535.3, ANSI Z535.4, and ANSI Z535.5.
 - b. Inscriptions for Red-Colored Tapes: "ELECTRIC LINE, HIGH VOLTAGE".
 - c. Inscriptions for Orange-Colored Tapes: "TELEPHONE CABLE, CATV CABLE, COMMUNICATIONS CABLE, OPTICAL FIBER CABLE".
 5. Tape Product :
 - a. Detectable three-layer laminate, consisting of a printed pigmented polyolefin film, a solid aluminum-foil core, and a clear protective film that allows inspection of the continuity of the conductive core; bright colored, continuous-printed on one side with the inscription of the utility where required, compounded for direct-burial service.
 - b. Width: 4 inches (75 mm).
 - c. Overall Thickness: 5 mils (0.125 mm).
 - d. Foil Core Thickness: 0.35 mil (0.00889 mm).
 - e. Weight: 28 lb/1000 sq. ft. (13.7 kg/100 sq. m).
 - f. Tensile according to ASTM D 882: 70 lbf (311.3 N) and 4600 psi (31.7 MPa).
- F. Stenciled Legend: In nonfading, waterproof, high contrast ink or paint. Minimum letter height shall be 1 inch (25 mm).

2.6 TAG PRODUCTS

- A. Write-on Tags:
 1. Polyester Tags: 0.015 inch (0.38 mm) thick, with corrosion-resistant grommet and cable tie for attachment.

2. Marker for Tags:
 - a. Permanent, waterproof, black ink marker recommended by tag manufacturer.
 - b. Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

2.7 SIGN PRODUCTS

- A. Baked-Enamel Signs:
 1. Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.
 2. 1/4-inch (6.4-mm) grommets in corners for mounting.
 3. Minimum Nominal Size: 7 by 10 inches (180 by 250 mm).
- B. Metal-Backed Butyrate Signs:
 1. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs, with 0.0396-inch (1-mm) galvanized-steel backing, punched and drilled for fasteners, and with colors, legend, and size required for application.
 2. 1/4-inch (6.4-mm) grommets in corners for mounting.
 3. Nominal Size: 10 by 14 inches (250 by 360 mm).
- C. Laminated Acrylic or Melamine Plastic Signs:
 1. Engraved legend.
 2. Thickness:
 - a. For signs up to 20 sq. in. (129 sq. cm), minimum 1/16 inch (1.6 mm) thick.
 - b. For signs larger than 20 sq. in. (129 sq. cm), 1/8 inch (3.2 mm) thick.
 - c. Engraved legend with black letters on white face or white letters on a dark gray background.
 - d. Punched or drilled for mechanical fasteners with 1/4-inch (6.4-mm) grommets in corners for mounting, or self-adhesive where suitable for environment.
 - e. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

2.8 CABLE TIE PRODUCTS

- A. General-Purpose Cable Ties: Fungus inert, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.
 1. Minimum Width: 3/16 inch (5 mm).
 2. Tensile Strength at 73 Deg F (23 Deg C) according to ASTM D 638: 12,000 psi (82.7 MPa).
 3. Temperature Range: Minus 40 to plus 185 deg F (Minus 40 to plus 85 deg C).
 4. Color: Black, except where used for color-coding.
- B. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.
 1. Minimum Width: 3/16 inch (5 mm).
 2. Tensile Strength at 73 Deg F (23 Deg C) according to ASTM D 638: 12,000 psi (82.7 MPa).
 3. Temperature Range: Minus 40 to plus 185 deg F (Minus 40 to plus 85 deg C).
 4. Color: Black.
- C. Plenum-Rated Cable Ties: Self-extinguishing, UV stabilized, one piece, and self-locking.
 1. Minimum Width: 3/16 inch (5 mm).
 2. Tensile Strength at 73 Deg F (23 Deg C) according to ASTM D 638: 7000 psi (48.2 MPa).
 3. UL 94 Flame Rating: 94V-0.
 4. Temperature Range: Minus 50 to plus 284 deg F (Minus 46 to plus 140 deg C).

5. Color: Black.

2.9 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Paint: Comply with requirements in painting Sections for paint materials and application requirements. Retain paint system applicable for surface material and location (exterior or interior).
- B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Verify and coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and operation and maintenance manual. Use consistent designations throughout Project.
- B. Install identifying devices before installing acoustical ceilings and similar concealment.
- C. Verify identity of each item before installing identification products.
- D. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and operation and maintenance manual.
- E. Apply identification devices to surfaces that require finish after completing finish work.
- F. Install signs with approved legend to facilitate proper identification, operation, and maintenance of electrical systems and connected items.
- G. Self-Adhesive Identification Products: Before applying electrical identification products, clean substrates of substances that could impair bond, using materials and methods recommended by manufacturer of identification product.
- H. System Identification for Raceways and Cables: Identification shall completely encircle cable or conduit. Place identification of two-color markings in contact, side by side. Secure tight to surface of conductor, cable, or raceway.
- I. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.
- J. Emergency Operating Instruction Signs: Install instruction signs with white legend on a red background with minimum 3/8-inch- (10-mm-) high letters for emergency instructions.
- K. Elevated Components: Increase sizes of labels, signs, and letters to those appropriate for viewing from the floor.
- L. Vinyl Wraparound Labels:
 1. Secure tight to surface at a location with high visibility and accessibility.
 2. Attach labels that are not self-adhesive type with clear vinyl tape, with adhesive appropriate to the location and substrate.
- M. Snap-around Labels: Secure tight to surface at a location with high visibility and accessibility.
- N. Self-Adhesive Wraparound Labels: Secure tight to surface of raceway or cable at a location with high visibility and accessibility.
- O. Self-Adhesive Labels:
 1. On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and operation and maintenance manual.
 2. Unless otherwise indicated, provide a single line of text with 1/2-inch- (13-mm-) high letters on 1-1/2-inch- (38-mm-) high label; where two lines of text are required, use labels 2 inches (50 mm) high.
- P. Snap-around Color-Coding Bands: Secure tight to surface at a location with high visibility and accessibility.
- Q. Heat-Shrink, Preprinted Tubes: Secure tight to surface at a location with high visibility and accessibility.

- R. Marker Tapes: Secure tight to surface at a location with high visibility and accessibility.
- S. Self-Adhesive Vinyl Tape: Secure tight to surface at a location with high visibility and accessibility.
 - 1. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches (150 mm) where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding.
- T. Tape and Stencil: Comply with requirements in painting Sections for surface preparation and paint application.
- U. Floor Marking Tape: Apply stripes to finished surfaces following manufacturer's written instructions.
- V. Underground Line Warning Tape:
 - 1. During backfilling of trenches, install continuous underground-line warning tape directly above cable or raceway at 12 inches below finished grade. Use multiple tapes where width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches (400 mm) overall.
 - 2. Install underground-line warning tape for direct-buried cables and cables in raceways.
- W. Write-on Tags:
 - 1. Place in a location with high visibility and accessibility.
 - 2. Secure using cable ties (UV-stabilized if outdoor, or plenum-rated if in plenum).
- X. Baked-Enamel Signs:
 - 1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
 - 2. Unless otherwise indicated, provide a single line of text with 1/2-inch- (13-mm-) high letters on minimum 1-1/2-inch- (38-mm-) high sign; where two lines of text are required, use signs minimum 2 inches (50 mm) high.
- Y. Metal-Backed Butyrate Signs:
 - 1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
 - 2. Unless otherwise indicated, provide a single line of text with 1/2-inch- (13-mm-) high letters on minimum 1-1/2-inch- (38-mm-) high sign; where two lines of text are required, use signs minimum 2 inches (50 mm) high.
- Z. Laminated Acrylic or Melamine Plastic Signs:
 - 1. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
 - 2. Unless otherwise indicated, provide a single line of text with 1/2-inch- (13-mm-) high letters on minimum 1-1/2-inch- (38-mm-) high sign; where two lines of text are required, use signs minimum 2 inches (50 mm) high.
- AA. Cable Ties: General purpose, for attaching tags, except as listed below:
 - 1. Outdoors: UV-stabilized nylon.
 - 2. In Spaces Handling Environmental Air: Plenum rated.

3.2 IDENTIFICATION METHODS

- A. Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment. Install access doors or panels to provide view of identifying devices.
- B. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, pull points, and locations of high visibility. Identify by system and circuit designation.
- C. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits, More Than 20 A: Identify with self-adhesive raceway labels or vinyl tape applied in bands.

- D. Control-Circuit Conductor Identification: For conductors and cables in pull and junction boxes, manholes, and handholes, use write-on tags or self-adhesive wraparound labels.
- E. Control-Circuit Conductor Termination Identification: For identification at terminations, provide heat-shrink preprinted tubes or self-adhesive wraparound labels.
- F. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Self-adhesive equipment labels, Baked-enamel warning signs or Metal-backed butyrate warning signs.
 - 1. Apply to exterior of door, cover, or other access.
 - 2. For equipment with multiple power or control sources, apply to door or cover of equipment.
 - 3. Install labels straight and level.
- G. Arc Flash Warning Labeling: Self-adhesive labels.
- H. Emergency Operating Instruction Signs: Self-adhesive labels, Baked-enamel warning signs, Metal-backed butyrate warning signs, Laminated acrylic or melamine plastic signs. White legend on a red background with minimum 3/8-inch- (10-mm-) high letters for emergency instructions at equipment used for power transfer load shedding Insert emergency operations.
- I. Equipment Identification Labels:
 - 1. Indoor Equipment: Self-adhesive label, Baked-enamel signs, Metal-backed butyrate signs, Laminated acrylic, or melamine plastic sign.
 - 2. Outdoor Equipment: Laminated acrylic or melamine sign or Stenciled legend 2 inches (50 mm) high or more.
 - 3. Install labels straight and level.

END OF SECTION 26 05 53

SECTION 262416

PANELBOARDS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Distribution panelboards.
 - 2. Lighting and appliance branch-circuit panelboards.

1.2 DEFINITIONS

- A. MCCB: Molded-case circuit breaker.
- B. SPD: Surge protective device.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of panelboard.
- B. Shop Drawings: For each panelboard and related equipment.
 - 1. Include dimensioned plans, elevations, sections, and details.
 - 2. Detail enclosure types including mounting and anchorage, environmental protection, knockouts, corner treatments, covers and doors, gaskets, hinges, and locks.
 - 3. Detail bus configuration, current, and voltage ratings.
 - 4. Short-circuit current rating of panelboards and overcurrent protective devices.
 - 5. Include evidence of NRTL listing for series rating of installed devices.
 - 6. Include evidence of NRTL listing for SPD as installed in panelboard.
 - 7. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
 - 8. Include wiring diagrams for power, signal, and control wiring.
 - 9. Key interlock scheme drawing and sequence of operations.
 - 10. Include time-current coordination curves for each type and rating of overcurrent protective device included in panelboards.

1.4 INFORMATIONAL SUBMITTALS

- A. Panelboard schedules for installation in panelboards.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

1.6 FIELD CONDITIONS

- A. Service Conditions: NEMA PB 1, usual service conditions, as follows:
 - 1. Ambient temperatures within limits specified.
 - 2. Altitude not exceeding 6600 feet (2000 m).

1.7 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace panelboards that fail in materials or workmanship within specified warranty period.
 - 1. Panelboard Warranty Period: 18 months from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PANELBOARDS COMMON REQUIREMENTS

- A. Fabricate and test panelboards according to IEEE 344 to withstand seismic forces defined in Section 260548.16 "Seismic Controls for Electrical Systems."

- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Comply with NEMA PB 1.
- D. Comply with NFPA 70.
- E. Enclosures: **Flush**-mounted, dead-front cabinets.
 - 1. Rated for environmental conditions at installed location.
 - a. Indoor Dry and Clean Locations: NEMA 250, **Type 1**
 - 2. Height: 84 inches (2.13 m) maximum.
 - 3. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box. Trims shall cover all live parts and shall have no exposed hardware.
 - 4. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover. Trims shall cover all live parts and shall have no exposed hardware.
- F. Phase, Neutral, and Ground Buses: Tin-plated aluminum.
- G. Conductor Connectors: Suitable for use with conductor material and sizes.
 - 1. Material: Tin-plated aluminum.
 - 2. Main and Neutral Lugs: Compression type, with a lug on the neutral bar for each pole in the panelboard.
 - 3. Ground Lugs and Bus-Configured Terminators: Compression type, with a lug on the bar for each pole in the panelboard.
- H. NRTL Label: Panelboards shall be labeled by an NRTL acceptable to authority having jurisdiction for use as service equipment with one or more main service disconnecting and overcurrent protective devices. Panelboards shall have meter enclosures, wiring, connections, and other provisions for utility metering. Coordinate with utility company for exact requirements.
- I. Future Devices: Panelboards shall have mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.
- J. Panelboard Short-Circuit Current Rating: Rated for series-connected system with integral or remote upstream overcurrent protective devices and labeled by an NRTL. Include label or manual with size and type of allowable upstream and branch devices listed and labeled by an NRTL for series-connected short-circuit rating.
- K. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals. Assembly listed by an NRTL for 100 percent interrupting capacity.

2.2 POWER PANELBOARDS

- A. Panelboards: NEMA PB 1, distribution type.
- B. Mains: **Lugs only**.
- C. Branch Overcurrent Protective Devices for Circuit-Breaker Frame Sizes 125 A and Smaller: **Plug-in circuit breakers**.
- D. Branch Overcurrent Protective Devices for Circuit-Breaker Frame Sizes Larger Than 125 A: **Plug-in circuit breakers where individual positive-locking device requires mechanical release for removal**.
- E. Branch Overcurrent Protective Devices: Fused switches.

2.3 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

- A. MCCB: Comply with UL 489, with series-connected rating to meet available fault currents.
 - 1. Thermal-Magnetic Circuit Breakers:
 - a. Inverse time-current element for low-level overloads.

- b. Instantaneous magnetic trip element for short circuits.
 - c. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
- B. Fused Switch: NEMA KS 1, Type HD; clips to accommodate specified fuses; lockable handle.
 - 1. Fuses and Spare-Fuse Cabinet: Comply with requirements specified in Section 262813 "Fuses."

2.4 IDENTIFICATION

- A. Panelboard Label: Manufacturer's name and trademark, voltage, amperage, number of phases, and number of poles shall be located on the interior of the panelboard door.
- B. Breaker Labels: Faceplate shall list current rating, UL and IEC certification standards, and AIC rating.
- C. Circuit Directory: Directory card inside panelboard door, mounted in **[transparent card holder] [metal frame with transparent protective cover]**.

2.5 ACCESSORY COMPONENTS AND FEATURES

- A. Portable Test Set: For testing functions of solid-state trip devices without removing from panelboard. Include relay and meter test plugs suitable for testing panelboard meters and switchboard class relays.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with NECA 1.
- B. Mount panelboard cabinet plumb and rigid without distortion of box.
- C. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.
- D. Install overcurrent protective devices and controllers not already factory installed.
 - 1. Set field-adjustable, circuit-breaker trip ranges.
- E. Make grounding connections and bond neutral for services and separately derived systems to ground. Make connections to grounding electrodes, separate grounds for isolated ground bars, and connections to separate ground bars.
- F. Install filler plates in unused spaces.
- G. Arrange conductors in gutters into groups and bundle and wrap with wire ties.

3.2 IDENTIFICATION

- A. Identify field-installed conductors, interconnecting wiring, and components; install warning signs complying with requirements in Section 260553 "Identification for Electrical Systems."
- B. Create a directory to indicate installed circuit loads; incorporate Owner's final room designations. Obtain approval before installing. Handwritten directories are not acceptable. Install directory inside panelboard door.
- C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
- D. Device Nameplates: Label each branch circuit device in power panelboards with a nameplate complying with requirements for identification specified in Section 260553 "Identification for Electrical Systems."
- E. Install warning signs complying with requirements in Section 260553 "Identification for Electrical Systems" identifying source of remote circuit.

3.3 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Acceptance Testing Preparation:
 - 1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
 - 2. Test continuity of each circuit.
- C. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test for low-voltage air circuit breakers stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
- D. Panelboards will be considered defective if they do not pass tests and inspections.
- E. Prepare test and inspection reports, including a certified report that identifies panelboards included and that describes scanning results, with comparisons of the two scans. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

END OF SECTION 262416

SECTION 262726 WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Straight-blade convenience receptacles.
 - 2. USB charger devices.
 - 3. GFCI receptacles.
 - 4. SPD receptacles.
 - 5. Toggle switches.
 - 6. Decorator-style convenience.
 - 7. Wall switch sensor light switches with dual technology sensors.
 - 8. Wall switch sensor light switches with passive infrared sensors.
 - 9. Wall switch sensor light switches with ultrasonic sensors.
 - 10. Digital timer light switches.
 - 11. Residential devices.
 - 12. Wall-box dimmers.
 - 13. Wall plates.

1.2 DEFINITIONS

- A. Abbreviations of Manufacturers' Names:
 - 1. Cooper: Copper Wiring Devices; Division of Cooper Industries, Inc.
 - 2. Hubbell: Hubbell Incorporated: Wiring Devices-Kellems.
 - 3. Leviton: Leviton Mfg. Company, Inc.
 - 4. Pass & Seymour: Pass& Seymour/Legrand.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.
- C. Samples: One for each type of device and wall plate specified, in each color specified.

1.4 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

PART 2 - PRODUCTS

2.1 GENERAL WIRING-DEVICE REQUIREMENTS

- A. Wiring Devices, Components, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NFPA 70.
- C. Devices that are manufactured for use with modular plug-in connectors may be substituted under the following conditions:
 - 1. Connectors shall comply with UL 2459 and shall be made with stranding building wire.
 - 2. Devices shall comply with the requirements in this Section.
- D. Devices for Owner-Furnished Equipment:

1. Receptacles: Match plug configurations.
- E. Source Limitations: Obtain each type of wiring device and associated wall plate from single source from single manufacturer.

2.2 STRAIGHT-BLADE RECEPTACLES

- A. Duplex Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, UL 498, and FS W-C-596.

2.3 GFCI RECEPTACLES

- A. General Description:
 1. 125 V, 20 A, straight blade, non-feed-through type.
 2. Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, UL 498, UL 943 Class A, and FS W-C-596.
 3. Include indicator light that shows when the GFCI has malfunctioned and no longer provides proper GFCI protection.

2.4 SPD RECEPTACLES

- A. General Description: Comply with NEMA WD 1, NEMA WD 6, UL 498, UL 1449, and FS W-C-596, with integral SPD in line to ground, line to neutral, and neutral to ground.
 1. 125 V, 20 A, straight blade type.
 2. SPD Components: Multiple metal-oxide varistors; with a nominal clamp-level rating of 400 V and minimum single transient pulse energy dissipation of 240 J, according to IEEE C62.41.2 and IEEE C62.45.
 3. Active SPD Indication: Visual and audible, with light visible in face of device to indicate device is "active" or "no longer in service."
- B. Duplex SPD Convenience Receptacles:
 1. Description: Straight blade, 125 V, 20 A; NEMA WD 6 Configuration 5-20R.

2.5 TOGGLE SWITCHES

- A. Comply with NEMA WD 1, UL 20, and FS W-S-896.

2.6 RESIDENTIAL DEVICES

- A. Residential-Grade, Tamper-Resistant Convenience Receptacles, 125 V, 15 A: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, and UL 498.
 1. Description: Labeled to comply with NFPA 70, "Receptacles, Cord Connectors, and Attachment Plugs (Caps)" Article, "Tamper-Resistant Receptacles in Dwelling Units" Section.
- B. Weather-Resistant and Tamper-Resistant Convenience Receptacles, 125 V, 15 A: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, and UL 498.
 1. Description: Labeled to comply with NFPA 70, "Receptacles, Cord Connectors, and Attachment Plugs (Caps)" Article, "Tamper-Resistant Receptacles in Dwelling Units" Section, when installed in wet and damp locations.
- C. Telephone Outlet:
 1. Description: Single RJ-45 jack for terminating [Category 5e], twisted pair cable complying with Section 271513 "Communications Copper Horizontal Cabling." Comply with UL 1863.
- D. TV Outlet:
 1. General Coaxial Cable Requirements: Broadband type, recommended by cable manufacturer specifically for broadband data transmission applications, RG-11. Coaxial cable and accessories shall have 75-ohm nominal impedance with a return loss of 20 dB maximum from 7 to 806 MHz.

2.7 WALL PLATES

- A. Single and combination types shall match corresponding wiring devices.

1. Plate-Securing Screws: Metal with head color to match plate finish.
 2. Material for Finished Spaces: Smooth, high-impact thermoplastic.
 3. Material for Damp Locations: Thermoplastic with spring-loaded lift cover, and listed and labeled for use in wet and damp locations.
- B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with Type 3R, weather-resistant **thermoplastic** with lockable cover.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with NECA 1, including mounting heights listed in that standard, unless otherwise indicated.
- B. Coordination with Other Trades:
1. Protect installed devices and their boxes. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of boxes.
 2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
 3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
 4. Install wiring devices after all wall preparation, including painting, is complete.
- C. Conductors:
1. Do not strip insulation from conductors until right before they are spliced or terminated on devices.
 2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
 3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
 4. Existing Conductors:
 - a. Cut back and pigtail, or replace all damaged conductors.
 - b. Straighten conductors that remain and remove corrosion and foreign matter.
 - c. Pigtailling existing conductors is permitted, provided the outlet box is large enough.
- D. Device Installation:
1. Replace devices that have been in temporary use during construction and that were installed before building finishing operations were complete.
 2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
 3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
 4. Connect devices to branch circuits using pigtails that are not less than 6 inches (152 mm) in length.
 5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, two-thirds to three-fourths of the way around terminal screw.
 6. Use a torque screwdriver when a torque is recommended or required by manufacturer.
 7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
 8. Tighten unused terminal screws on the device.
 9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device-mounting screws in yokes, allowing metal-to-metal contact.

- E. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.
- F. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.
- G. GFCI Receptacles: Install non-feed-through-type GFCI receptacles where protection of downstream receptacles is not required.

3.2 FIELD QUALITY CONTROL

- A. Test Instruments: Use instruments that comply with UL 1436.
- B. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated digital-display indicators of measurement.
- C. Perform the following tests and inspections.
 - 1. Tests for Convenience Receptacles:
 - a. Line Voltage: Acceptable range is 105 to 132 V.
 - b. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is unacceptable.
 - c. Ground Impedance: Values of up to 2 ohms are acceptable.
 - d. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
 - e. Using the test plug, verify that the device and its outlet box are securely mounted.
 - f. Tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.
- D. Wiring device will be considered defective if it does not pass tests and inspections.
- E. Prepare test and inspection reports.

END OF SECTION 262726

SECTION 26 51 19

LED LIGHTING FIXTURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes the following for LED luminaires:
 - 1. Products.
 - 2. Substitutions.
 - 3. Materials.
 - 4. Luminaire support.
 - 5. Emergency lighting units.
 - 6. Batteries for single luminaires.
 - 7. Exit signs.

1.2 DEFINITIONS

- A. CCT: Correlated color temperature.
- B. CRI: Color Rendering Index.
- C. Fixture: See "Luminaire."
- D. IP: International Protection or Ingress Protection Rating.
- E. LED: Light-emitting diode.
- F. Lumen: Unit of light output (total in all directions).
- G. Luminaire: Complete lighting unit, including lamp, reflector, and housing.
- H. Emergency Lighting Unit: A lighting unit with integral or remote emergency battery powered supply and the means for controlling and charging the battery and unit operation.
- I. BUG Rating: Backlight-Uplight-Glare rating, as defined by the Illuminating Engineering Society and referenced in codes and standards.
- J. IES File: Photometric performance data for a luminaire, in .ies format for use in photometric calculation software.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product, arranged by drawing designation.
- B. Shop Drawings: For nonstandard and custom luminaires.
 - 1. Include plans, elevations, sections, and mounting and attachment details.
 - 2. Include details of luminaire assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 3. Include diagrams for power, signal, and control wiring.

1.4 FIELD CONDITIONS

- A. Mark locations of exterior luminaires for approval by Architect prior to the start of luminaire installation.
- B. Product Schedule: Use same designations indicated on Drawings.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

1.6 WARRANTY

- A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.
- B. Warranty Period: Three year(s) from date of Substantial Completion.

- C. Special Warranty for Emergency Lighting Batteries: Manufacturer's standard form in which manufacturer of battery-powered emergency lighting unit agrees to repair or replace components of rechargeable batteries that fail in materials or workmanship within specified warranty period.

1.7 SUBSTITUTIONS

- A. The lighting fixture layouts of spaces indicated in the Contract Documents are based upon photometric data, quality, construction and appearance of the first fixture listed in the lighting fixture schedule. Substitutions of fixtures are allowed provided the following is provided with the Submittal package.
 - 1. Provide all data as required for submittals with substitution package. Indicate variances with fixtures listed in lighting fixture schedule.
 - 2. Provide foot-candle calculations for each room or area.
 - 3. Architect has final aesthetic approval on all substituted fixtures.

PART 2 - PRODUCTS

2.1 LUMINAIRE LISTING REQUIREMENTS

- A. Standards:
 - 1. Electrical Components, Devices, and Accessories shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
 - 2. NRTL Compliance: Luminaires for hazardous locations (where indicated on drawings) shall be listed and labeled for indicated class and division of hazard by an NRTL.
 - 3. Recessed luminaires shall comply with NEMA LE 4.
 - 4. Emergency lighting units, exit signs, and batteries shall comply with UL 924.
 - 5. Minimum Rated lamp life of 50,000 hours.

2.2 BATTERIES

- A. Internal Type Emergency Power Unit: Self-contained, modular, battery-inverter unit, factory mounted within luminaire body and compatible with driver.
 - 1. Emergency Connection: Operate lamp(s) continuously upon loss of normal power. Connect unswitched circuit to battery-inverter unit and switched circuit to fixture ballast.
 - 2. Operation: Relay automatically turns lamp on when power-supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
 - 3. Environmental Limitations: Rate equipment for continuous operation under the following conditions unless otherwise indicated:
 - a. Indoor Ambient Temperature: 32 deg F (0 deg C) or exceeding 104 deg F (40 deg C).
 - b. Outdoor Ambient Temperature: Minus 10 deg F (minus 23 deg C) to 105 deg F (40 deg C), with an average value exceeding 95 deg F (35 deg C) over a 24-hour period.
 - c. Ambient Storage Temperature: Not less than minus 4 deg F (minus 20 deg C) and not exceeding 140 deg F (60 deg C).
 - d. Humidity: More than 95 percent (condensing).
 - e. Altitude: Exceeding 6000 feet (1829 m).
 - 4. Test Push-Button and Indicator Light: Visible and accessible without opening fixture or entering ceiling space.
 - a. Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
 - b. Indicator Light: LED indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
 - 5. Battery: Sealed, maintenance-free.

6. Charger: Fully automatic, solid-state, constant-current type with sealed power transfer relay.
 7. Integral Self-Test (where specified): Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and a flashing red LED.
- B. External Type: Self-contained, modular, battery-inverter unit, suitable for powering one luminaire, remote mounted from luminaire. (For battery/inverter units supplying multiple luminaires, see Section titled Central Inverters for Emergency Lighting)
1. Emergency Connection: Operate lamp(s) continuously. Connect unswitched circuit to battery-inverter unit and switched circuit to luminaire.
 2. Operation: Relay automatically turns lamp on when power-supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
 3. Battery: Sealed, maintenance-free.
 4. Charger: Fully automatic, solid-state, constant-current type.
 5. Housing: NEMA 250, Type 1 (type 3R if located outdoors) enclosure listed for installation inside, on top of, or remote from luminaire. Comply with manufacturer's instructions regarding installation distance.
 6. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
 7. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
 8. Integral Self-Test (where specified): Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and a flashing red LED.

2.3 MATERIALS

- A. Metal Parts:
1. Free of burrs and sharp corners and edges.
 2. Sheet metal components shall be steel unless otherwise indicated.
 3. Form and support to prevent warping and sagging
- B. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.
- C. Variations in finishes are unacceptable in the same piece. Variations in finishes of adjoining components are acceptable if they are within the range of approved Samples and if they can be and are assembled or installed to minimize contrast.

2.4 LUMINAIRE SUPPORT

- A. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for channel and angle iron supports and nonmetallic channel and angle supports.
- B. Single-Stem Hangers: 1/2-inch (13-mm) steel tubing with swivel ball fittings and ceiling canopy. Finish same as luminaire.
- C. Wires: ASTM A 641/A 641 M, Class 3, soft temper, zinc-coated steel, 12 gage (2.68 mm).
- D. Rod Hangers: 3/16-inch (5-mm) minimum diameter, cadmium-plated, threaded steel rod.
- E. Hook Hangers: Integrated assembly matched to luminaire, line voltage, and equipment with threaded attachment, cord, and locking-type plug.
- F. Supports shall be able to maintain luminaire position after cleaning and maintenance.

- G. Support luminaires without causing deflection of finished surface.
- H. Exterior luminaire mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire weight and a vertical force of 400 percent of luminaire weight.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with NECA 1.
- B. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.
- C. Install lamps in each luminaire if not integral.
- D. Adjust luminaires that require field adjustment or aiming. Include adjustment of exterior photoelectric devices to prevent false operation of relay by artificial light sources, favoring a north orientation.
- E. Supports: Sized and rated for luminaire weight.
- F. Flush-Mounted Luminaire Support: Secured to outlet box.
- G. Wall-Mounted Luminaire Support:
 - 1. Attached to structural members in walls.
 - 2. Do not attach luminaires directly to gypsum board.
- H. Suspended Luminaire Support:
 - 1. Where suspension is longer than 48 inches (1200 mm), brace to limit swinging.
 - 2. Stem-Mounted, Single-Unit Luminaires: Suspend with twin-stem hangers. Support with approved outlet box and accessories that hold stem and provide damping of luminaire oscillations. Support outlet box vertically to building structure using approved devices.
 - 3. Cable mounted luminaires: Use 5/32-inch- (4-mm-) diameter aircraft cable supports.
 - 4. Do not use ceiling grid as support for suspended luminaires. Connect support wires or rods to building structure.
- I. Ceiling-Grid-Mounted Luminaires:
 - 1. Secure to any required outlet box.
 - 2. Support from structure per code.
 - 3. Secure luminaire using approved fasteners in a minimum of four locations, spaced near corners of luminaire.
- J. Install ground-mounted luminaires on concrete base with top 4 inches (100 mm) above finished grade (unless noted otherwise on drawings) or surface at luminaire location. Cast conduit into base, and finish by troweling and rubbing smooth.

3.2 CORROSION PREVENTION

- A. Aluminum: Do not use in contact with earth or concrete. When in direct contact with a dissimilar metal, protect aluminum by insulating fittings or treatment.
- B. Steel Conduits: In concrete foundations, wrap conduit with 0.010-inch- (0.254-mm-) thick, pipe-wrapping plastic tape applied with a 50 percent overlap.

3.3 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.
 - 2. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.
- B. Luminaire will be considered defective if it does not pass operation tests and inspections.
- C. Prepare test and inspection reports.
- D. Train Owner's maintenance personnel to adjust, operate, and maintain luminaires and photocell relays.

END OF SECTION 26 51 19

SECTION 265600

EXTERIOR LIGHTING SUPPORTS

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. This Section includes the following:
 - 1. Luminaire poles and mounting accessories.
- B. Related Sections include the following:
 - 1. Section 26 51 00 "LED Lighting Fixtures" for interior and exterior luminaire requirements.

1.3 DEFINITIONS

- A. Luminaire: Complete lighting fixture, including ballast housing if provided.
- B. Pole: Luminaire support structure, including tower used for large area illumination.
- C. Standard: Same definition as "Pole" above.

1.4 STRUCTURAL ANALYSIS CRITERIA FOR POLE SELECTION

- A. Dead Load: Weight of luminaire and its horizontal and vertical supports, lowering devices, and supporting structure, applied as stated in AASHTO LTS-4.
- B. Live Load: Single load of 500 lbf, distributed as stated in AASHTO LTS-4.
- C. Ice Load: Load of 3 lbf/sq. ft., applied as stated in AASHTO LTS-4.
- D. Wind Load: Pressure of wind on pole and luminaire, calculated and applied as stated in AASHTO LTS-4.
 - 1. Wind speed for calculating wind load for poles exceeding 50 feet in height is 80 mph.
 - 2. Wind speed for calculating wind load for poles 50 feet or less in height is 80 mph.

1.5 SUBMITTALS

- A. Product Data: For each luminaire, pole, and support component, arranged in order of lighting unit designation. Include data on features, accessories, finishes, and the following:
 - 1. Physical description of luminaire, including materials, dimensions, effective projected area, and verification of indicated parameters.
 - 2. Details of attaching luminaires and accessories.
 - 3. Details of installation and construction.
 - 4. Luminaire materials.
 - 5. Photoelectric relays.
 - 6. Ballasts, including energy-efficiency data.
 - 7. Materials, dimensions, and finishes of poles.
 - 8. Means of attaching luminaires to supports, and indication that attachment is suitable for components involved.
 - 9. Anchor bolts for poles.
 - 10. Pole foundations.
 - 11. Design data, include IES files for all fixture types.

1.6 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70E and IEEE C2, "National Electrical Safety Code."
- C. Comply with NFPA 70. National Electrical Code.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Package aluminum poles for shipping according to ASTM B 660.
- B. Store poles on decay-resistant-treated skids at least 12 inches above grade and vegetation. Support poles to prevent distortion and arrange to provide free air circulation.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace products that fail in materials or workmanship; that corrode; or that fade, stain, perforate, erode, or chalk due to effects of weather or solar radiation within specified warranty period. Manufacturer may exclude lightning damage, hail damage, vandalism, abuse, or unauthorized repairs or alterations from special warranty coverage.
 - 1. Warranty Period for Metal Corrosion: Five years from date of Substantial Completion.
 - 2. Warranty Period for Poles: Repair or replace lighting poles and standards that fail in finish, materials, and workmanship within manufacturer's standard warranty period, but not less than three years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 POLES AND SUPPORT COMPONENTS, GENERAL REQUIREMENTS

- A. Structural Characteristics: Comply with AASHTO LTS-4.
 - 1. Wind-Load Strength of Poles: Adequate at indicated heights above grade without failure, permanent deflection, or whipping in steady winds of speed indicated in Part 1 "Structural Analysis Criteria for Pole Selection" Article, with a gust factor of 1.3.
 - 2. Strength Analysis: For each pole, multiply the actual equivalent projected area of luminaires and brackets by a factor of 1.1 to obtain the equivalent projected area to be used in pole selection strength analysis.
- B. Luminaire Attachment Provisions: Comply with luminaire manufacturers' mounting requirements. Use stainless-steel fasteners and mounting bolts, unless otherwise indicated.
- C. Mountings, Fasteners, and Appurtenances: Corrosion-resistant items compatible with support components.
 - 1. Materials: Shall not cause galvanic action at contact points.
 - 2. Anchor Bolts, Leveling Nuts, Bolt Caps, and Washers: Hot-dip galvanized after fabrication, unless stainless-steel items are indicated.
 - 3. Anchor-Bolt Template: Plywood or steel.
- D. Concrete Pole Foundations: Cast in place, with anchor bolts to match pole-base flange. Concrete, reinforcement, and formwork are specified in Division 03 Section "Cast-in-Place Concrete" or in structural/civil details. Grout around each base.
- E. Power-Installed Screw Foundations: Factory fabricated by pole manufacturer, with structural steel complying with ASTM A 36/A 36M and hot-dip galvanized according to ASTM A 123/A 123M; and with top-plate and mounting bolts to match pole base flange and strength required to support pole, luminaire, and accessories.
- F. Breakaway Supports: Frangible breakaway supports, tested by an independent testing agency acceptable to authorities having jurisdiction, according to AASHTO LTS-4.

2.2 STEEL POLES

- A. Poles: Comply with ASTM A 500, Grade B, carbon steel with a minimum yield of 46,000 psig; 1-piece construction up to 40 feet in height with access handhole in pole wall.

1. Shape: Round, straight.
2. Mounting Provisions: Butt flange for bolted mounting on foundation or breakaway support.
- B. Steel Mast Arms: Single-arm type, continuously welded to pole attachment plate. Material and finish same as pole.
- C. Brackets for Luminaires: Detachable, cantilever, without underbrace.
 1. Adapter fitting welded to pole and bracket, then bolted together with stainless-steel bolts.
 2. Cross Section: Tapered oval, with straight tubular end section to accommodate luminaire.
 3. Match pole material and finish.
- D. Pole-Top Tenons: Fabricated to support luminaire or luminaires and brackets indicated, and securely fastened to pole top.
- E. Steps: Fixed steel, with nonslip treads, positioned for 15-inch vertical spacing, alternating on opposite sides of pole; first step at elevation 10 feet above finished grade.]
- F. Intermediate Handhole and Cable Support: Weathertight, 3-by-5-inch handhole located at midpoint of pole with cover for access to internal welded attachment lug for electric cable support grip.
- G. Grounding and Bonding Lugs: Welded 1/2-inch threaded lug, complying with requirements in Division 26 Section "Grounding and Bonding for Electrical Systems," listed for attaching grounding and bonding conductors of type and size listed in that Section, and accessible through handhole.
- H. Cable Support Grip: Wire-mesh type with rotating attachment eye, sized for diameter of cable and rated for a minimum load equal to weight of supported cable times a 5.0 safety factor.
- I. Prime-Coat Finish: Manufacturer's standard prime-coat finish ready for field painting.
- J. Galvanized Finish: After fabrication, hot-dip galvanize complying with ASTM A 123/A 123M.
- K. Factory-Painted Finish: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
 1. Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, and other contaminants that could impair paint bond. Grind welds and polish surfaces to a smooth, even finish. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or SSPC-SP 8, "Pickling."
 2. Interior Surfaces of Pole: One coat of bituminous paint, or otherwise treat for equal corrosion protection.
 3. Exterior Surfaces: Manufacturer's standard finish consisting of one or more coats of primer and two finish coats of high-gloss, high-build polyurethane enamel.
 - a. Color: As selected by Architect from manufacturer's full range.

2.3 ALUMINUM POLES

- A. Poles: Seamless, extruded structural tube complying with ASTM B 429, Alloy 6063-T6 with access handhole in pole wall.
- B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 1. Valmont Square, 4- Bolt Poles.
 2. Shape: Square, straight.
 3. Mounting Provisions: Butt flange for bolted mounting on foundation or breakaway support.

- C. Pole-Top Tenons: Fabricated to support luminaire or luminaires and brackets indicated, and securely fastened to pole top.
- D. Grounding and Bonding Lugs: Welded 1/2-inch threaded lug, listed for attaching grounding and bonding conductors of type and size listed in that Section, and accessible through handhole.
- E. Brackets for Luminaires: Detachable, with pole and adapter fittings of cast aluminum. Adapter fitting welded to pole and bracket, then bolted together with stainless-steel bolts.
 - 1. Finish: Same as pole.
- F. Prime-Coat Finish: Manufacturer's standard prime-coat finish ready for field painting.
- G. Aluminum Finish: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
 - 1. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
 - 2. Natural Satin Finish: Provide fine, directional, medium satin polish (AA-M32); buff complying with AA-M20; and seal aluminum surfaces with clear, hard-coat wax.
 - 3. Class I, Clear Anodic Finish: AA-M32C22A41 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.
 - 4. Class I, Color Anodic Finish: AA-M32C22A42/A44 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 611.

2.4 POLE ACCESSORIES

- A. Base Covers: Manufacturers' standard metal units, arranged to cover pole's mounting bolts and nuts. Finish same as pole.

PART 3 EXECUTION

3.1 LUMINAIRE INSTALLATION

- A. Fasten luminaire to indicated structural supports.
 - 1. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.
- B. Adjust luminaires that require field adjustment or aiming. Include adjustment of photoelectric device to prevent false operation of relay by artificial light sources.
- C. Provide excavation and concrete foundation for lighting poles.

3.2 POLE INSTALLATION

- A. Align pole foundations and poles for optimum directional alignment of luminaires and their mounting provisions on the pole.
- B. Clearances: Maintain the following minimum horizontal distances of poles from surface and underground features, unless otherwise indicated on Drawings:
 - 1. Fire Hydrants and Storm Drainage Piping: 60 inches.
 - 2. Water, Gas, Electric, Communication, and Sewer Lines: 10 feet.
 - 3. Trees: 15 feet.
- C. Concrete Pole Foundations: Set anchor bolts according to anchor-bolt templates furnished by pole manufacturer. Concrete materials, installation, and finishing requirements are specified in Division 03 Section "Cast-in-Place Concrete" or structural/civil details.
- D. Foundation-Mounted Poles: Mount pole with leveling nuts, and tighten top nuts to torque level recommended by pole manufacturer.
 - 1. Use anchor bolts and nuts selected to resist seismic forces defined for the application and approved by manufacturer.

2. Grout void between pole base and foundation. Use nonshrink or expanding concrete grout firmly packed to fill space.
3. Install base covers, unless otherwise indicated.
4. Use a short piece of 1/2-inch-diameter pipe to make a drain hole through grout. Arrange to drain condensation from interior of pole.
- E. Embedded Poles with Tamped Earth Backfill: Set poles to depth below finished grade indicated on Drawings, but not less than one-sixth of pole height.
 1. Dig holes large enough to permit use of tampers in the full depth of hole.
 2. Backfill in 6-inch layers and thoroughly tamp each layer so compaction of backfill is equal to or greater than that of undisturbed earth.
- F. Embedded Poles with Concrete Backfill: Set poles in augered holes to depth below finished grade indicated on Drawings, but not less than one-sixth of pole height.
 1. Make holes 6 inches in diameter larger than pole diameter.
 2. Fill augered hole around pole with air-entrained concrete having a minimum compressive strength of 3000 psi at 28 days, and finish in a dome above finished grade.
 3. Use a short piece of 1/2-inch-diameter pipe to make a drain hole through concrete dome. Arrange to drain condensation from interior of pole.
 4. Cure concrete a minimum of 72 hours before performing work on pole.
- G. Poles and Pole Foundations Set in Concrete Paved Areas: Install poles with minimum of 6-inch-wide, unpaved gap between the pole or pole foundation and the edge of adjacent concrete slab. Fill unpaved ring with pea gravel to a level 1 inch below top of concrete slab.
- H. Raise and set poles using web fabric slings (not chain or cable).

3.3 BOLLARD LUMINAIRE INSTALLATION

- A. Align units according to design drawings.
- B. Install on concrete base with top 4 inches above finished grade or surface at bollard location. Cast conduit into base, and shape base to match shape of bollard base. Finish by troweling and rubbing smooth. Concrete materials, installation, and finishing are specified in Division 03 Section "Cast-in-Place Concrete."

3.4 CORROSION PREVENTION

- A. Aluminum: Do not use in contact with earth or concrete. When in direct contact with a dissimilar metal, protect aluminum by insulating fittings or treatment.
- B. Steel Conduits: Comply with Division 16 section "Grounding and Bonding." In concrete foundations, wrap conduit with 0.010-inch-thick, pipe-wrapping plastic tape applied with a 50 percent overlap.

3.5 GROUNDING

- A. Ground poles and support structures according to Division 16 Section "Grounding and Bonding."
 1. Install wire type equipment grounding conductor in circuits supplying pole luminaires. Bond EGC to metallic components of pole accessories and foundations and any other exposed metal parts.
 2. Grounding electrodes at pole bases are not required unless multiple circuits supply pole structure, or if specifically indicated on design drawings.

3.6 FIELD QUALITY CONTROL

- A. Inspect each installed fixture, base, and pole for damage. Replace damaged fixtures and components.

3.7 CLEANING

- A. Clean electrical parts and remove foreign materials.

- B. Remove dirt and debris from enclosure.
- C. Clean finishes and touch up damage.

END OF SECTION 265600

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SECTION 31 0513 - SOILS FOR EARTHWORK

PART I - GENERAL

1.1 SUMMARY

- A. Section includes grading, excavation, fill, backfill, compaction, and other earthwork required for construction of roads and parking areas, landscape areas, site utilities, and other site construction including building pads.
- B. Related Sections:

1.2 RELATED DOCUMENTS:

- A. Drawing and general provisions of Contract, including General and Supplementary Provisions Division-1 Specification sections, and the geotechnical engineering report, Addendum No. 1, as prepared by Geomat, Inc., dated September 11, 2020, apply to work of this section.

1.3 DESCRIPTION OF WORK:

- A. Extent of earthwork is indicated on drawings.
- B. Fill construction shall consist of constructing embankment including the preparation of the areas upon which they are to be placed, the placing and compacting of approved material within areas where unsuitable material has been removed; the placing and compacting of material in holes, pits and other depressions.
- C. Preparation of subgrade for walks and pavements is included as part of this work.
- D. Backfilling of trenches within building lines is included as part of this work.
- E. Excavation for Mechanical/Electrical Work: Excavation and backfill required in conjunction with underground mechanical and electrical utilities, and buried mechanical and electrical appurtenances is included as work of this section.
- F. Definition - "Excavation" consists of removal of material encountered to subgrade elevations indicated and subsequent disposal of materials removed.

1.4 QUALITY ASSURANCE:

- A. Codes and Standards: Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.
- B. Testing and Inspection Service: Employ, at Contractor's expense, testing laboratory to perform soil testing and inspection service for quality control testing during earthwork operations.

1.5 SUBMITTALS:

- A. Testing Reports-Excavating: Submit following reports directly to the Architect/Engineers from the testing services, with copy to Contractor.

Test reports on borrow material.

Inspection of subgrade to check actual soil conditions relative to those described in the Geotechnical Report.

Field density test reports.

One optimum moisture-maximum density curve for each type of soil encountered.

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Report of testing performed to determine suitability of materials used.

1.6 JOB CONDITIONS:

A. Site Information: Data on indicated subsurface conditions are not intended as representations or warranties of accuracy or continuity between soil bearings. It is expressly understood that Owner will not be responsible for interpretations or conclusions drawn therefrom by Contractor. Data are made available for convenience of Contractor.

B. Additional test borings and other exploratory operations may be made by Contractor at no cost to Owner.

C. Existing Utilities: Locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of support and protection during earthwork operations.

D. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility owner immediately for directions., Cooperate with Architect/Engineer and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.

E. Do not interrupt existing utilities serving facilities occupied and used by Owner or others, during occupied hours, except when permitted in writing by the Architect/Engineer and then only after acceptable temporary utility services have been provided.

F. Provide minimum of 48-hour notice to the Architect/Engineer, and receive written notice to proceed before interrupting any utility.

G. Use of Explosives: The use of explosives is not permitted.

H. Protection of Persons and Property: Barricade open excavations occurring as part of this work and post with warning lights.

I. Operate warning lights as recommended by authorities having jurisdiction.

J. Protect structures, utilities, sidewalks, pavements and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

PART II - PRODUCTS

2.1 SOIL MATERIALS:

A. Definitions:

Satisfactory soil materials are defined in the geotechnical engineering report, Addendum No. 1, as prepared by Geomat, Inc., dated September 11, 2020.

Unsatisfactory soil materials are defined in the geotechnical engineering report as prepared by Geomat, Inc., dated September 11, 2020.

B. Backfill and Fill Materials: Satisfactory soil materials as outlined in the geotechnical engineering report, Addendum No. 1, as prepared by Geomat, Inc., dated September 11, 2020.

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PART III - EXCAVATION

3.1 EXCAVATION:

A. Excavation is Unclassified, and includes excavation to subgrade elevations indicated, regardless of character of materials and obstructions encountered.

B. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of the Architect/Engineer. Unauthorized excavation, as well as remedial work directed by the Architect/Engineer, shall be at Contractor's expense.

C. Under retaining walls, fill unauthorized excavation by extending indicated bottom elevation of footing or base to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position, when acceptable to the Architect/Engineer.

D. Elsewhere, backfill and compact unauthorized excavations as specifies for authorized excavations of same classification, unless otherwise directed by the Architect/Engineer.

E. Additional Excavation: When excavation has reached required subgrade elevations, notify Architect/Engineer who will make an inspection of conditions.

If unsuitable bearing materials are encountered at required subgrade elevations, carry excavations deeper and replace excavated material as directed by Architect/Engineer and/or as outlined in the geotechnical engineering report.

F. Stability of Excavations: Slope sides of excavations to comply with local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated.

Maintain sides and slopes of excavations in safe conditions until completion of backfilling.

G. Dewatering: Prevent surface water an subsurface or ground water from flowing into excavations and from flooding project site and surrounding area.

Do not allow water to accumulate in excavations. Remove water to prevent soil changes detrimental to stability of subgrades. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away form excavations. Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey rain water and water removed from excavations to collecting or run-off areas. Do not use trench excavations as temporary drainage ditches.

H. Material Storage: Stockpile satisfactory excavated materials where directed, until required for backfill or fill. Place, grade and shape stockpiles for proper drainage.

Locate and retain soil materials away from edge of excavations. Do not store within drip line of trees indicated to remain.

Dispose of excess soil material and waste materials as herein specified.

I. Excavation of Pavements: Cut surface under pavements to comply with cross-sections, elevations and grades as shown.

J. Excavation for Trenches: Dig trenches to the uniform width required for particular item to be installed, sufficiently wide to provide ample working room. Coordinate with Division 33 Utilities Section and Division 26 Electrical.

Excavate trenches to depth indicated or required. Carry depth of trenches for piping to establish indicated flow lines and invert elevations. Beyond building perimeter, keep bottoms of trenches sufficiently below finish grade to avoid freeze-ups.

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For pipes or conduit 5" or less in nominal size and for flat-bottomed multiple-duct conduit units, do not excavate beyond indicated depths. Hand excavate bottom cut to accurate elevations and support pipe or conduit on undisturbed soil.

For pipes or conduit 6" or larger in nominal size, tanks and other mechanical/electrical work indicated to receive sub-base, excavate to sub-base depth indicated, or, if not otherwise indicate, to 6" below bottom or work to be supported.

Except as otherwise indicated, excavate for exterior water-bearing piping (water, steam, condensate, drainage so top of piping is not less than 3'-6" below finished grade.

Grade bottoms of trenches as indicated, notching under pipe bells to provide solid bearing for entire body of pipe.

Concrete is specified in Division 3.

Do not backfill trenches until tests and inspections have been made and backfilling authorized by the Architect/Engineer. Use care in backfilling to avoid damage or displacement of pipe systems.

K. Cold Weather Protection: Protect excavation bottoms against freezing when atmospheric temperature is less than 35°F (1°C).

3.2 COMPACTION:

A. General: Control soil compaction during construction providing minimum percentage of density specified for each area classification as outlined in the geotechnical engineering report.

Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing until moisture content is reduced to a satisfactory value.

3.3 BACKFILL AND FILL:

A. General: Place acceptably soil material in layers to required subgrade elevations, for each areas classification listed below, as outlined in the geotechnical engineering report as prepared by Geomat, Inc., dated September 11, 2020.

B. In excavation, use satisfactory excavated or borrow material.

C. Under grassed areas, use satisfactory excavated or borrow material.

D. Under walks and pavements, use sub-base material, or satisfactory excavated or borrow material, or combination of both.

E. Under steps, use sub-base material.

F. Under piping and conduit, use sub-base material where sub-base is indicated under piping or conduit; shape to fit bottom 90° of cylinder.

G. Backfill excavations as promptly as work permits, but not until completion of the following:

Acceptance of construction below finish grade including, where applicable, damp-proofing, waterproofing and perimeter insulation.

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Inspection, testing, approval and recording locations of underground utilities.
Removal of concrete formwork.

Removal of trash and debris.

Permanent or temporary horizontal bracing is in place on horizontally supported walls.

H. Ground Surface Preparation: Remove vegetation, debris, unsatisfactory soil material, obstructions and deleterious materials from ground surface prior to placement of fills. Plow, strip or bread-up sloped surfaces steeper than 1 vertical to 4 horizontal so that fill material will bond with existing surface.

When existing ground surface has a density less than that specifies under "Compaction" for particular area classification, break up ground surface, pulverize, moisture-condition to optimum moisture content and compact to required depth and percentage of maximum density.

I. Placement and Compaction: Place backfill and fill materials in layers not more than 8" in loose depth for material compacted by heavy compaction equipment, and not more than 4" in loose depth for material compacted by hand-operated tampers. Coordinate with requirements as outlined in the geotechnical engineering report as prepared by Geomat, Inc., dated September 11, 2020.

Before compaction, moisten or aerate each layer as necessary to provide optimum moisture content. Compact each layer to required percentage of maximum dry density or relative fry density for each areas classification. Do not place backfill or fill material on surfaces that muddy, frozen or contain frost or ice.

Place backfill and fill materials evenly adjacent to structures, piping or conduit to required elevations. Take care to prevent wedging action of backfill against structures or displacement of piping or conduit by carrying material uniformly around structure, piping or conduit to approximately same elevation in each lift.

3.4 GRADING:

A. General: Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are indicated, or between such points and existing grades.

B. Grading Outside Building Lines: Grade areas adjacent to building lines to drain away from structures and to prevent ponding.

C. Finish surfaces free from irregular surface changes, and as follows:

D. Lawn or Unpaved Areas: Finish areas to receive topsoil to within not more than 0.10' above or below required subgrade elevations.

E. Walks: Shape surface or areas under pavement to line, grade and cross-section, with finish surface not more than 0.10' above or below required subgrade elevation.

F. Compaction: After grading, compact subgrade surfaces to the depth and indicated percentage of maximum or relative density for each areas classification as outlined in the geotechnical engineering report, Addendum No. 1, as prepared by Geomat, Inc., dated September 11, 2020.

G. See Division-03 for paving specifications - Soils Report, Addendum No. 1, as prepared by Geomat, Inc., dated September 11, 2020.

H. Grade Control: During construction, maintain lines and grades including crown and cross-slope of sub-base course.

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I. Placing: Place sub-base course material on prepared subgrade in layers of uniform thickness, conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting sub-base material during placement operations.

When a compacted sub-base course is shown to be 6" thick or less, place material in a single layer. When shown to be more than 6" thick, place material in equal layers, except no single layer more than 6" or less than 3" in thickness when compacted.

3.5 FIELD QUALITY CONTROL:

- A. Earthwork Construction: Minimum of 1 test per 1,000 C.Y. of embankment per 8" lift.
- B. Concrete Tests: Complete concrete tests consisting of air content, slump, and 3 compressive test specimens shall be taken for each concrete pour and for each 50 C.Y. of any one pour greater than 50 C.Y. Also a slump test shall be taken on each mixer truck load of fresh concrete.
- C. Trench Backfill: Minimum of 1 test per each drainage structure location per 12" lift.

3.6 MAINTENANCE:

- A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.

Repair and re-establish grades in settled, eroded and rutted areas to specified tolerances.
- B. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape and compact to required density prior to further construction.
- C. Settling: Where settling is measurable or observable at excavated areas during general project warranty period, remove surface (pavement, lawn or other finish), add backfill material, compact and replace surface treatment. Restore appearance, quality and condition of surface or finish to match adjacent work and eliminate evidence of restoration to greatest extent possible.

3.7 DISPOSAL OF EXCESS AND WASTE MATERIALS:

- A. Removal from Owner's Property: Remove waste materials, including unacceptable and/or excess excavated material, trash and debris and dispose of it off Owner's property.

END OF SECTION 31 0513

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SECTION 31 1000 - SITE CLEARING

PART 1 GENERAL

1.1 WORK INCLUDED

- A. The drawings, specifications, the AIA General Conditions, and other Division 1 sections, and the geotechnical engineering report, Addendum No. 1, as prepared by Geomat, Inc., dated September 11, 2020.

1.2 DESCRIPTION OF WORK

- A. The site clearing work includes, but is not limited to:
 - Protection of existing trees not designated for removal.
 - Removal of trees and other vegetation.
 - Topsoil stripping.
 - Clearing and grubbing.
 - Removing above-ground improvements.
 - Removing below-ground improvements.
 - Erection of a temporary construction perimeter fence.

1.3 JOB CONDITIONS

- A. Traffic: Conduct site clearing operations to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks or other occupied or used facilities without permission from authorities having jurisdiction.
- B. Protection of Existing Improvements: Provide protection necessary to prevent damage to existing improvements indicated to remain in place.
 - Protect improvements on adjoining properties and on Owner property.
 - Restore damaged improvements to their original condition, as acceptable to all parties having jurisdiction.
- C. Protection of Existing Trees and Vegetation: Protect existing trees and other vegetation indicated to remain in place against unnecessary cutting, breaking, or skinning of roots, skinning and bruising of bark smothering of trees by stockpiling construction materials or excavated materials within drip lines, excess foot or vehicular traffic, or parking of vehicles within drip line. Provide temporary guards to protect trees and vegetation to be left standing.
 - Water trees and other vegetation to remain within limits of contract work as required to maintain their health during the course of construction operations.
 - Provide protection for roots over 1-1/2" diameter cut during construction operations. Coat cut faces with an emulsified asphalt, or other acceptable coating, formulated for use on damaged plant tissues. Temporarily cover exposed roots with wet burlap to prevent roots from drying out; cover with earth as soon as possible.
 - Repair or replace trees and vegetation indicated to remain which are damaged by construction operations, in a manner acceptable to the Contracting Officer. Employ licensed arborist to repair damages to trees and shrubs.

PART 2 PRODUCTS

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- A. Not applicable to work of this section.

PART 3 EXECUTION

3.1 SITE CLEARING

- A. General: Remove trees, shrubs, grass, and other vegetation, improvements, or obstructions interfering with installation of new construction. Remove such items elsewhere on-site or premises as specifically indicated. Removal includes digging out stumps and roots.

Carefully and cleanly cut roots and branches of trees indicated to be left standing, where such roots and branches obstruct new construction.

- B. Clearing and Grubbing: Clear site of trees, shrubs, and other vegetation, except for those indicated to be left standing.

Completely remove stumps, roots, and other debris protruding through ground surface.

Use only hand methods for grubbing inside drip line of trees indicated to be left standing.

Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated.

- C. Removal of Improvements: Remove existing above-grade and below-grade improvements necessary to permit construction and other work as indicated.

Abandonment or removal of certain underground pipe or conduits may be shown on mechanical or electrical drawings, and is included under work of those sections. Removal of abandoned underground piping or conduit interfering with construction is included under this section. Coordinate below-grade removal with Section 310513 - Soils for Earthwork.

3.2 DISPOSAL OF WASTE MATERIALS

- A. Burning on Owner's Property: Burning is not permitted on Owner's property.

- B. Removal from Owner's Property: Remove waste materials and unsuitable and excess topsoil from Owner's property and dispose of off-site in legal manner.

3.3 TEMPORARY CONSTRUCTION PERIMETER FENCE

- A. The Contractor shall erect a six-foot (6') high temporary construction perimeter fence for security purposes, or as required by the Owner.

END OF SECTION 31 1000

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SECTION 31 2001 - SOIL STERILIZATION

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The work covered by this section of the specifications consist of furnishing all materials, labor, and equipment and in performing all operations in connection with the application of soil sterilant type herbicide, complete, in strict accordance with this section of the specifications and applicable drawings and general provisions of Contract.

1.2 EQUIPMENT:

- A. All equipment, tools, and machines used in the performance of the work required by this section of the specifications shall be subject to the approval of the Architect/Engineer and shall be maintained in satisfactory working condition at all times.

PART 2 - PRODUCTS

2.1 MATERIALS:

- A. Herbicide soil sterilants shall be an aqueous solution of:

Dupont 85% CMU weed killer
Telvar
Sodium TCA-90
Monobor-Chlorate
Polybar-Chlorate
Hyvar XL
Or approved equal

PART 3 - EXECUTION

3.1 CONSTRUCTION METHODS:

- A. Soil Sterilization: It is anticipated that all areas to receive base course and/or paving, as determined by the Architect/Engineer, will need soil sterilization to insure pavement protection from weed growth. After the curb and gutter has been placed and grading is complete to subgrade, the subgrade shall be thoroughly scarified to a depth of 6" and watered to near optimum moisture content. Then an aqueous solution of an approved herbicide soil sterilant shall be applied to the subgrade at the rate recommended by the manufacturer. Compaction of the subgrade shall then be handled in the usual manner with the provision that the prime coat be applied before the subgrade has a chance to dry out. This provision is necessary due to the fact that the weed killers require a certain amount of moisture to be effective.

END OF SECTION 31 2001

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SECTION 31 2002 - SUBGRADE PREPARATION

PART I GENERAL

1.1 DESCRIPTION OF WORK

- A. This section shall govern the preparation of natural or excavated areas prior to the placement of subbase or base material, pavement, curbs, and gutters, driveways, sidewalks, or other structures in accordance with the geotechnical engineering report, Addendum No. 1, as prepared by Geomat, Inc., dated September 11, 2020.

1.2 REFERENCES

ASTM

D 1557 D 4254

PART II MATERIALS

Not applicable to this section.

PART III EXECUTION

3.1 PREPARATION OF SUBGRADE

- A. With the exception of areas where compacted fills have been constructed as specified in areas where new construction is required, the subgrade and surfaces thereof shall be prepared as noted on the plans and/or in accordance with the geotechnical engineering report, Addendum No. 1, as prepared by Geomat, Inc., dated September 11, 2020.

3.2 RELATIVE COMPACTION

- A. All soft and unstable material and other portions of the subgrade which will not compact readily or serve the intended purposes shall be removed and replaced with suitable material from the excavation or borrow or suitable materials shall be added and, by manipulations, be incorporated into the subgrade to produce a material meeting subgrade requirements.
- B. The top portion of embankments and the bottom of excavations which form the subgrade under all paved areas, including the areas under sidewalks, driveways, and curbs and gutters shall be compacted to the following degrees and depths of compaction.
- C. Each layer shall be compacted to a density as specified in each respective geotechnical engineering report, Addendum No. 1, as prepared by Geomat, Inc., dated September 11, 2020.
- In roadway and parking lot areas the density of the upper 8 inches shall as specified in the geotechnical report, Addendum No. 1, as prepared by Geomat, Inc., dated September 11, 2020.
- D. Subgrade compaction as specified shall extend a minimum of one foot on either side of all structures, as defined in Subsection 312002 1.1, as well as under all pavement, or one foot beyond the shoulder when curb and gutter is not required.

3.3 SUBGRADE TOLERANCE

- A. Subgrade upon which pavement, sidewalk, curb and gutter, driveways, or other structures are to be placed shall not vary more than +1/4 inch or -1/2 inch per 10 foot in any direction from the specified grade and cross section. Subgrade upon which subbase or base material is to be placed shall not vary more than +1/2 inch or -1 inch per 10

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foot in any direction from the specified grade and cross section. Variations within the above specified tolerance shall be compensating so that the average grade and cross section specified are met.

3.4 GRADING OF AREAS NOT TO BE PAVED

- A. Areas where "grade only" is called for on the plan shall be graded to meet the tolerances from the subgrade where subbase or base material is to be placed. The surface shall be constructed to a straight grade from the finished pavement elevations or top of curb elevations shown on the plans to the elevation of the existing ground at the extremities of the area to be graded or to the property line or as directed by the ENGINEER, but in no case less than 4 inches above top of curb or edge of pavement elevation (where no curbs are constructed).

END OF SECTION 31 2002

SECTION 31 2311
EARTHWORK FOR BUILDING CONSTRUCTION

PART 1 – GENERAL

1.01 WORK INCLUDED

- A. The work covered by this Section consists of furnishing all plant, labor, equipment, appurtenances and material in performing all operations, hauling, placing, spreading, watering, processing, compacting and shaping earth sections, within the building limits, complete in place in accordance with the Project Manual and Drawings.

1.02 RELATED WORK ELSEWHERE

- A. Clearing - Section 31 1000
- B. Under-Slab Vapor Retarder – Section 07 2600
- C. General Foundation Notes on Drawings.
- D. Project Soils Report – shall be completely reviewed and understood by the contractor. In case of conflict or omission, the Project Soils Report shall govern.

1.03 SUBSURFACE SOIL DATA

- A. Subsurface soil investigations have been made and the results are available for examination by the Contractor. This is not a warranty of conditions; the Contractor is expected to examine the site and determine for himself the character of materials to be encountered.
- B. No additional allowance will be made for rock removal, site clearing and grading, filling, compaction, disposal, or removal of any unclassified materials.

1.04 REFERENCES

- A. ASTM International, latest versions:
 - 1. ASTM D 1556-Standard Test Method for Density of Soil in Place by the Sand-Cone Method
 - 2. ASTM D 1557-Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³))]
 - 3. ASTM D 698-Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard effort (12,400 ft-lbf/ft³(600Kn-M/M³ ASTM D 4318-10 Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
 - 4. ASTM D 4318-Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
 - 5. ASTM D 6938-Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

1.05 SUBMITTALS

- A. Submit copies of materials certificates and test results for materials in accordance with type of tests, frequencies and remarks as outlined in the sampling and testing schedule.

1.06 TESTING AND INSPECTION

- A. General: The Owner shall employ the services of a registered, licensed Geotechnical Engineer to observe all controlled earthwork soil testing. The testing laboratory shall provide continuous on-site observation by experienced personnel during construction of fill material. The Contractor shall notify the testing laboratory at least two working days in advance of any field operations of controlled earthwork, or of any resumption of operations after stoppages.

B. Report of Field Density Tests

1. The Geotechnical Engineer shall submit, daily, the results of field density tests required by these specifications.

C. Costs of Tests and Inspection

1. The cost of testing, inspecting, and engineering, as specified in this section of the specifications, shall be borne by the Owner.

- D. Lines and Grades:** Alignment and grade of all elements shall be made on true tangents and curves. Grades shall conform to the elevations indicated on Drawings, with minor adjustments, to provide a smooth approach at building lines, at connections to existing paving and to provide proper drainage. Correct irregularities at no cost to the Owner.

1.07 WEATHER LIMITATIONS

- A.** Controlled fill shall not be constructed when the atmospheric temperature is below 35 degrees F. When the temperature falls below 35 degrees, it shall be the responsibility of the Contractor to protect all areas of completed work against any detrimental effects of ground freezing by methods approved by the testing laboratory. Any areas that are damaged by freezing shall be reconditioned, reshaped, and compacted by the Contractor in conformance with the requirements of this specification without additional cost to the Owner.

PART 2 – PRODUCTS

2.01 NATIVE OR IMPORTED SOILS

- A.** Soils shall conform to the following physical characteristics:

Sieve Size	Percent Passing
Sq. Openings	By Weight
3 inch	100
No. 4	50 - 100
No. 200	50 Max

- B.** The plasticity index of the material to be used for fill or backfill, as determined in accordance with ASTM D 4318 shall not exceed 10.

PART 3 - EXECUTION

3.01 PREPARATION

- A.** Clearing and Grubbing: Prior to placing structural fill all borrow areas and areas to receive structural fill shall be stripped of vegetation and deleterious materials. Strippings shall be hauled offsite or stockpiled for subsequent use in landscaped areas or non-structural fill areas as designated by the Owner or his representative and approved by the Geotechnical Engineer.

3.02 CONSTRUCTION AREA TREATMENT

- A.** Site Preparation - Fill Areas: Prior to placing native or imported soil the areas to be filled shall be scarified to a depth of 12 inches and moisture conditioned as described below. The area to be filled shall then be compacted to a minimum of 95 percent of maximum density as determined in accordance with ASTM D 1557. Any soft or "spongy" areas shall be removed as directed by the Geotechnical Engineer and replaced with native or imported soil as described herein.
- B.** Site Preparation - Cut Areas: Following excavation to rough grade all building and pavement areas shall be scarified to a depth of 12 inches and moisture conditioned as described below. All building and paved areas shall be compacted to a minimum of 95 percent of maximum density as determined by ASTM D 1557.

3.03 EQUIPMENT AND METHODS

- A. In areas not accessible to heavy equipment, distribute by and compact with hand operated vibratory compactors.

3.04 BORROW

- A. The Contractor shall provide sufficient material for fill to the lines, elevations and cross sections as shown on the contract drawings from borrow areas.
- B. The Contractor shall obtain from the Owners of said borrow areas the right to excavate material, shall pay all royalties and other charges involved, and shall pay all expenses in developing the source including the cost of right-of-way required for hauling the material.

3.05 COMPACTION

- A. Native or imported soil shall be spread in layers not exceeding 10 inches, watered as necessary, and compacted. Moisture content at time of compaction shall be plus/minus 3 percent of optimum moisture. A density of not less than 95 percent of maximum dry density shall be obtained within the building pads.
- B. Optimum moisture content and maximum dry density for each soil type used shall be determined in accordance with ASTM D 1557.
- C. Compaction of the native or imported soil shall be by mechanical means only. Where vibratory compaction equipment is used, it shall be the Contractor's responsibility to ensure that the vibrations do not damage nearby buildings or other adjacent property. Where vibratory compaction is not possible, pneumatic rolling equipment shall be used.

MATERIAL	MINIMUM PERCENT COMPACTION
Native or imported soils in the building area	95
Subbase for slab supports	95
Subgrade below native soils	95
Miscellaneous backfill	90

3.06 MOISTURE CONTROL

- A. The material, while being compacted, shall be within the moisture range of 3 percent below to 3 percent above optimum, well distributed throughout the layer.

3.07 DENSITY REQUIREMENTS

- A. Density of undisturbed soils, in-place fill and backfill shall be determined in accordance with the procedures of ASTM D 1556 or ASTM D 6938. If tests indicate that the density of in-place soil is less than required, the material shall be scarified, moistened or dried as necessary to obtain proper moisture content and recompact as necessary to achieve the proper densities. Sufficient density tests shall be made, and reports submitted by the Testing Laboratory indicating all cut and fill areas were compacted and graded in accordance with the requirements.

3.08 SLOPE PROTECTION & DRAINAGE

- A. Berming and grading shall be done as may be necessary to prevent surface water from flowing into and out of the construction area. Any water accumulating therein shall be removed by pumping or by other methods.

3.09 SOIL EROSION PROTECTION

- A. The Contractor shall ensure that no soil erodes or blows from the site into public right-of-way or onto private property.
- B. The Contractor shall promptly clean up any material which erodes or blows into the public right-of-way or onto private property.

3.10 PRESERVATION OF PROPERTY

- A. Provide temporary fences, barricades, coverings, or other protections to preserve existing items indicated to remain and to prevent injury or damage to persons or property. Apply protections to adjacent properties as required.
- B. Restore damaged work to condition existing prior to start of work, unless otherwise directed.

3.11 EXISTING UTILITIES

- A. The Contractor shall verify the location of any utility lines, pipelines, or underground utility lines in or near the area of the work in advance of and during Earthwork. The Contractor is fully responsible for any and all damage caused by failure to locate, identify and preserve any and all existing utilities, pipelines and underground utility lines. Repair damaged utilities to the satisfaction of the utility owner at no expense to the Owner.
- B. Should uncharted or incorrectly charted piping or other utilities be encountered during grading, consult the Architect immediately for directions as to procedures.
- C. Cooperate with the Owner and public or private utility companies in keeping service and facilities in operation.

3.12 WASTE

- A. Dispose of all waste off Owner's property.
- B. Burning of waste will not be permitted.

3.13 AIR POLLUTION

- A. Use water sprinkling, temporary enclosures, and other suitable methods to limit dust and dirt air pollution. Comply with governing regulations pertaining to environmental protection.

<p style="text-align: center;">SAMPLING AND TESTING SCHEDULE FOR EARTHWORK</p> <p style="text-align: center;">FIELD QUALITY CONTROL</p>			
MATERIAL	TEST FOR	FREQUENCY	REMARKS
NATURAL GROUND	Compaction in accordance with ASTM D 1556 or ASTM D 6938	1 per 2500 square feet of surface	Conduct a minimum of 2 tests on each section.
EMBANKMENT AND/OR SUBGRADE	Soil Conditions Moisture-Density in accordance with ASTM D 1557	Test 1 per soil classification	
	Compaction control in accordance with ASTM D 1556 or ASTM D 6938	1 per each lift every 2500 square feet of surface	Immediately after placing, Conduct a minimum of 2 tests per section
		1 per each lift for each 2500 square feet of fill	

END OF SECTION 31 23 11

MESA HEIGHTS TEACHERAGE SUBDIVISION - PHASE I
CENTRAL CONSOLIDATED SCHOOL DISTRICT

SECTION 31 2333 - TRENCHING AND BACKFILLING

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Trench excavation and backfill shall be performed in accordance with the notes and details shown on the drawings and the general provisions of Contract.

PART 2 - EXECUTION

2.1 EXCAVATION

- A. Excavation for pipe shall be by open unsupported trenches unless otherwise specified or shown on the drawings. Where material is excavated from trenches and piled adjacent thereto, it shall be piled and maintained so that the toe of the slope of the material is at least 2' from the edge of the trench.

2.2 ROCK EXCAVATION

- A. All rock excavation shall be classified as "Unclassified Excavation" and no additional payment will be made for this excavation.

2.3 UNSUITABLE MATERIAL

- A. Material encountered in trench excavation unsuitable for support of the pipe shall be removed to the depth necessary, as directed by the Architect/Engineer, to properly support the pipe and provide a suitable base for backfilling.

2.4 MAXIMUM LENGTH OF OPEN TRENCH

- A. In developed areas, no more than 300' of trench shall be opened in advance of pipe laying operations. Backfilling shall begin as soon as pipe is laid and inspected and shall keep pace with the pipe laying. In undeveloped areas the maximum allowable length of open trench in advance of pipe laying operations shall also be 300'. Except by permission of the Architect/Engineer, the maximum length of open trench in any one location where concrete structures are cast in place will be that which is necessary to permit uninterrupted progress.
- B. Construction shall be pursued as follows: Excavation, setting of reinforcing steel, placing of floor slab, walls, and cover slab or arch shall follow each other without any one of these operations preceding the next nearest operation by more than 200'. Failure by the Contractor to comply with the limitations specified herein or as may be specifically authorized by the Architect/Engineer may result in a written order from the Architect/Engineer to halt progress of the work until such time as compliance with this paragraph has been achieved and the work can be prosecuted in an orderly sequence of operations.

2.5 WIDTH OF TRENCHES

- A. Trench widths from bottom of pipe to a point 12" above the top of the pipe shall be kept to the practical minimum required for properly laying, aligning, grading, and jointing of the pipe, but no less than pipe outside diameter plus 16". Trench widths at a point 12" above the top of pipe to the top of the trench shall be in accordance with applicable regulations. When soil will not stand vertical, the trench sides shall be sloped to provide not less than the outside diameter plus 16" at the pipe invert. The Contractor shall maintain all trenches in a safe condition protecting the men working and general public in any case; trench protection shall be in accordance with applicable OSHA regulations.

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2.6 ACCESS TO TRENCHES

- A. Safe and suitable ladders shall be provided for all excavation in accordance with OSHA regulations.

2.7 REMOVAL OF EXISTING PAVEMENT, SIDEWALK, AND DRIVEWAY

- A. Existing concrete pavement, sidewalk, or driveway removed in connection with construction shall be replaced to neatly sawed edges. Saw cuts shall be made to minimum depth of 1-1/2" or 1/4 the thickness of the concrete, whichever is greater. Cuts shall be neat and to true straight lines with no shatter outside the removal area. If a saw cut would fall within 30" of a construction joint, cold joint, expansion joint, of edge, the concrete shall be removed and replaced to the joint or edge. Concrete sidewalk and/or driveway may be removed so that a minimum 30" square is replaced. If the saw cut would fall within 12" of a score mark, the concrete shall be removed and replaced to the score mark. Existing bituminous pavement removed in connection with construction shall be cut with a saw, pavement breaker, cutting wheel, or other suitable tool approved by the Architect/Engineer. Care should be taken to assure that the edge of the removed pavement does not vary from a straight line more than 2" from the mean. The Contractor shall furnish all material, labor, equipment, and supplies necessary to do the work required in removal of pavement and disposal of same where required. Saw cutting is required on all concrete paving and may be required on asphalt paving on state maintained streets and roads. Saw cutting shall be 1-1/2" minimum depth of cut. The cutting shall be carried in a vertical plane through the pavement along a straight line marking the limits of the cut. Any unnecessarily irregular breakage or cracking caused by the Contractor shall be removed and replaced by the Contractor without added expense to the Owner. Paving cuts for manholes and valve boxes shall be SQUARE and at distances from outside diameter to manholes and valve boxes as indicated on the plans.

2.8 BRACING EXCAVATIONS

- A. Excavations shall be braced and sheeted to provide complete safety to persons working therein and shall comply with applicable federal (OSHA - where necessary, obtain OSHA permit), state, and local laws and ordinances. Support systems for trenches in excess of 20' and adjacent to existing improvement or subject to vibrations or ground water shall be in accordance with OSHA Regulations. The Contractor shall be fully responsible for sufficiency and adequacy of bracing excavations with respect to work under construction and to adjacent utility lines and private property. If sheeting is used to support the excavated trench, the sheeting, after backfilling, shall be removed by the Contractor and no such sheeting will be permitted to remain in the trench except when, in the opinion of the Architect, field conditions or the type of sheeting or methods of construction used by the Contractor are such as to make the removal of sheeting impracticable. In such cases, the Architect may permit portions of the sheeting to be cut off to such depth as he may approve and permit lower portions thereof to remain in the trench.

2.9 BACKFILL

- A. The Contractor shall proceed with backfilling as soon as practicable. Compaction shall follow as soon after the placing as practicable.

PART 3 - PRODUCTS

3.1 MATERIALS

- A. Pipe Zone: The area around the pipe within the trench/prism to a level one foot above the highest point of the pipe (top of pipe or service connection) shall be select cohesion less materials. Cohesion less material shall consist of natural soil from the excavation or imported material meeting the following gradation and plasticity requirements unless exceptions are approved by the Architect/Engineer. When tested in accordance with ASTM D 422, the select material shall have 100% passing the 1-1/2" screen. The maximum percent passing the No. 200 sieve shall be based on the plasticity index determined in accordance with ASTM D 423 and D 424 as indicated below:

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Plasticity Index	Maximum % Passing No. 200 Sieve
0-3	50%
3-6	35%
6-10	25%
Over 10	Unsuitable

- B. Backfill above pipe zone - The area within the trench prism above the pipe zone shall consist of the soil and rock excavated from the trench.

3.2 COMPACTION METHODS

- A. Backfill above pipe zone shall be compacted by whatever method the Contractor chooses to a density not less than 95% of the soils maximum dry density as determined by ASTM D-1557. Where the backfill contains more than 65% of material retained on the No. 4 sieve, the percent of compaction shall be waived. This backfill shall be placed in a minimum of two 6" lifts.

3.3 TEMPORARY RESURFACING

- A. Unless permanent pavement is specified to be placed immediately, a temporary dust-free patch shall be placed wherever excavation is made through existing pavements, sidewalks, or driveways. The patch shall be placed, rolled, and maintained to provide a smooth surface for traffic.

3.4 PERMANENT RESURFACING

- A. Where permanent resurfacing or permanent surface patching of backfilled trenches is specified or indicated on the plans, such resurfacing or patching shall be of at least the same thickness as existing, contiguous surfaces. Materials and workmanship required for permanent resurfacing or permanent surface patching, including the proper joining to existing contiguous surfaces, shall conform to the requirements specified for new work in the applicable sections of these specifications.

END OF SECTION 31 2333

SECTION 31 31 16

TERMITE CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Chemical soil treatment.

1.02 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 22 00 - Unit Prices, for additional unit price requirements.

1.03 REFERENCE STANDARDS

- A. Title 7, United States Code, 136 through 136y - Federal Insecticide, Fungicide and Rodenticide Act; 1947 (Revised 2001).

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Indicate toxicants to be used, composition by percentage, dilution schedule, intended application rate.
- C. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements.
- D. Certificate of compliance from authority having jurisdiction indicating approval of toxicants.
- E. Manufacturer's Instructions: Indicate caution requirement.
- F. Record and document moisture content of soil before application.
- G. Installer Qualifications: Company specializing in performing work of the type specified and with minimum three (3) years of documented experience.
- H. Maintenance Data: Indicate re-treatment schedule .
- I. Warranty: Submit warranty and ensure that forms have been completed in Owner's name.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing this type of work and:
 - 1. Having minimum of three (3) years documented experience.
 - 2. Licensed in New Mexico.
 - a. Only trained and certified workers shall apply the termicide.

1.06 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide five year installer's warranty against damage to building caused by termites.
 - 1. Include coverage for repairs to building and to contents damaged due to the infestation of termites during the warranty period. Repair damage and re-treat.

PART 2 PRODUCTS

2.01 CHEMICAL SOIL TREATMENT

- A. Toxicant Chemical: EPA (Title 7, United States Code, 136 through 136y) approved; synthetically color dyed to permit visual identification of treated soil.
- B. Diluent: Recommended by toxicant manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that soil surfaces are unfrozen, sufficiently dry to absorb toxicant, and ready to receive treatment.
- B. Do not apply toxicant during inclement weather.

- C. Remove all extraneous sources of wood cellulose and other edible materials such as wood debris, tree stumps and roots, stakes, formwork, and construction waste wood from soil within and around foundations.
- D. Verify final grading is complete.

3.02 APPLICATION - CHEMICAL TREATMENT

- A. Comply with requirements of U.S. EPA and applicable state and local codes.
- B. Spray apply toxicant in accordance with manufacturer's instructions.
- C. Toxicant type and location:
 - 1. Apply Repellent Termiticide under slabs-on-grade areas below a wood floor system.
 - 2. Apply Non-Repellent Termiticide or Repellent Termiticide to all areas indicated below.
 - a. Under slabs-on-grade and basement slabs including around plumbing pipes and electric conduit penetrating the slab.
 - b. At both sides of foundation wall including around plumbing pipes and electric conduit penetrating the foundation wall.
- D. Under slabs, apply toxicant immediately prior to installation of vapor barrier.
 - 1. Toxicant may be applied before placing granular fill under slabs if recommended in writing by termiticide manufacturer.
- E. At foundation walls, apply toxicant immediately prior to finish grading work outside foundations.
- F. Apply extra treatment to structure penetration surfaces such as pipe or ducts, and soil penetrations such as grounding rods or posts.
- G. Re-treat disturbed treated soil with same toxicant as original treatment.
- H. Provide Contractor a work order or treatment ticket showing the toxicant used, quantity applied, area or location applied, date and applicator. Failure to comply with these items will be sufficient cause to retreat the area.
- I. If inspection or testing identifies the presence of termites, re-treat soil and re-test.

3.03 PROTECTION

- A. Do not permit soil grading over treated work.

END OF SECTION

MESA HEIGHTS TEACHERAGE SUBDIVISION - PHASE I
CENTRAL CONSOLIDATED SCHOOL DISTRICT

SECTION 32 1216 - ASPHALT PAVING

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Asphalt concrete pavement shall consist of a mixture of mineral aggregate and asphalt, mixed at a central mixing plant and spread and compacted on a prepared subgrade or base in accordance with the plans and geotechnical engineering report as prepared by Geomat, Inc., dated September 11, 2020.

PART 2 - PRODUCTS

2.1 PRIME COAT (NOT REQUIRED)

- A. General: If a prime coat is specified or shown on the plans, it shall be applied to surfaces of bases at least 12 hours prior to placing the asphalt cement unless otherwise directed by the Architect/Engineer.
- B. Conditions of Base Course: Immediately prior to application of the asphalt prime, an inspection will be made by the Architect/Engineer to verify that the base course has been constructed as specified. Also, all loose and foreign material shall be removed by light sweeping. Material so removed shall not be mixed with cover aggregate.

The surface to be primed shall be in a smooth and well-compacted condition, true to grade and cross-section, and free from ruts and inequalities.

- C. Application: Asphalt prime shall be applied uniformly at the rate of 0.10 to 0.30 gallon per S.Y. or as directed by the Architect/Engineer. It shall be applied only when permitted by the Architect/Engineer and when the air temperature is not less than 40°F. Prime coat shall consist of asphalt emulsion.

In order to prevent lapping at the junction of two applications, the distributor shall be promptly shut off. A hand spray shall be used to touch up all spots unavoidably missed by the distributor.

- D. Pressure Distributor: The pressure distributor used for applying prime coat material shall be equipped with pneumatic tires and shall be so designed and operated as to distribute the prime material in a uniform spray without atomization, in the amount and between the limits of temperature specified. It shall be equipped with a speed tachometer registering feet per minute and so located as to be visible to the truck driver to enable him to maintain the constant speed required for application at the specified rate.

The pressure distributor shall be equipped with a tachometer registering the pump speed, pressure gauge, and a volume gauge. The rates of application shall not vary from the rates specified by the Architect/Engineer by more than 10%. Suitable means for accuracy indicating at all times the temperature of the prime material shall be provided. The thermometer well shall be so placed as not to be in contact with a heating tube.

The distributor shall be so designed that the normal width of application shall be not less than 6', with provisions for the application of lesser width when necessary. If provided with heating attachments, the distributor shall be so equipped and operated that the prime material shall be circulated or agitated throughout the entire heating process.

- E. Sand Cover: The asphalt prime coat should preferably be entirely absorbed by the base course and, therefore, require no sand cover. If, however, it has not been completely absorbed prior to the start of placing the asphalt concrete mixture and in the meantime it is necessary to permit traffic thereon, just sufficient sand shall be spread over the surface to blot up the excess liquid asphalt and prevent picking it up under traffic. Also, sand shall be used in amounts deemed necessary by the Architect/Engineer at intersections and such areas where traffic may pass over the prime coat. Prior to placing the asphalt concrete, loose or excess sand shall be swept from the base. If a sand cover is specified on the drawings to cover asphalt prime, it shall be applied within 4 hours after the application of said prime coat, unless otherwise ordered by the Architect/Engineer.

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- F. Protection: Liquid asphalt shall be prevented from spraying upon adjacent pavements, structures, guard rails, guide posts, culvert markers, trees, and shrubbery that are not to be removed; adjacent property and improvements; and other facilities or that portion of the traveled way being used by traffic.

The Contractor shall protect the prime coat against all damage and markings, both from foot and other traffic. Barricades shall be placed where necessary to protect the prime coat. If, after the prime coat has been applied to the satisfaction of the Architect/Engineer and has been accepted by him, it is disturbed by negligence on the part of the Contractor, it shall be restored at his expense to its condition at the time of acceptance. No material shall be placed until the prime coat is in a condition satisfactory to the Architect/Engineer.

2.2 TACK COAT

- A. If the asphalt concrete pavement is being constructed directly to an existing hard-surfaced pavement, a tack coat shall be evenly and uniformly applied to such existing pavement edge preceding the placing of the asphalt concrete. The surface shall be free of water, all foreign material, or dust when the tack coat is applied. No greater area shall be treated in any one day than will be covered by the asphalt concrete during the same day. Traffic will not be permitted over tack coating.
- B. Tack coat shall consist of cationic emulsified asphalt. Application rate shall be 0.10 to 0.15 gallons per S.Y., the exact quantities being determined by the Architect/Engineer.
- C. A similar tack coat shall be applied to the surface of any course is, in the opinion of the Architect/Engineer, the surface is such that a satisfactory bond cannot be obtained between it and the succeeding course.
- D. When required, the contact surfaces of all cold pavement joints, curbs, gutters, manholes, and the like shall be painted with a tack coat immediately before the adjoining asphalt concrete is placed. Asphalt tack coat shall be applied in controlled amounts as shown on the plans or determined by the Architect/Engineer. Surfaces where a tack coat is required shall be cleaned to the satisfaction of the Architect/Engineer before the tack coat is applied.

PART 3 - EXECUTION

3.1 PLACING ASPHALT CONCRETE MIXTURE

- A. At the time of delivery to the site of the work, the temperature of mixture shall be not lower than that required to obtain the density specified.
- B. The Architect/Engineer shall require a temperature which laboratory tests show will be suitable for its workability.
- C. When hauling time from the mixing plant to the job site exceeds two hours or when inclement weather prevails, bituminous mixtures shall be covered with tarpaulins while being hauled. The tarpaulins shall completely cover the load and be firmly tied down. Mixtures shall be delivered to site of the work without segregation of the ingredients and within the temperature range specified in this section.
- D. Asphalt concrete may be placed when the temperature is 50°F and rising and the weather is favorable as determined by the Architect/Engineer. None may be placed in wet weather or on a wet surface.
- E. The asphalt concrete shall be evenly spread upon the subgrade or base to such a depth that after rolling it will be of the specified cross-section and grade of the course being constructed.
- F. Depositing and spreading of the asphalt concrete shall be accomplished by means of self-propelled mechanical spreading and finishing machine designed especially for that purpose and which permits depositing and spreading in a strip 8' to 14' in width. The machine shall be equipped with a vibrating or tamping screen capable of being accurately regulated and adjusted to distribute a layer of the material to a definite predetermined thickness and template. The paving machine shall be equipped with an automatic leveling device controlled from an external guide.

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The initial pass for each course shall be made using a paver equipped with a 40' minimum external reference, except this shall not apply when asphaltic concrete is placed adjacent to concrete pavement or gutter. Subsequent passes shall utilize a matching device of 1' minimum length, riding on the adjacent lift.

- G. All joints shall be completely bonded.
- H. Placing once commenced must be continued without interruption. No greater amount of the mixture shall be delivered in any one day than can be properly distributed and rolled during the day.
- I. In narrow, deep, or irregular sections, intersections, turnouts, or driveways, where it is impractical to spread the finish the base and level the surface mixtures by machine methods, the Contractor may use spreading equipment or acceptable hand methods approved by the Architect/Engineer.

3.2 ROLLING

- A. Asphalt concrete shall be thoroughly compacted by rolling. Rollers shall be of a type approved by the Architect/Engineer. Rolling shall be commenced with a steel wheel roller along the lower edge of the area to be rolled and be continued until the edge is thoroughly compacted, after which the roller shall gradually advanced to the crown point, both sides being rolled in a like manner. Rolling shall be continued with steel and pneumatic wheel rollers until the layer has become thoroughly compacted throughout and is true to grade and cross-sections.
- B. Rollers shall be maintained in good mechanical condition, and those that cannot be operated without jerking or driven along a straight path shall not be used. No leakage from any roller shall be allowed to come in contact with the pavement being constructed nor shall any roller be permitted to stand motionless on any portion of the work before it has been properly compacted. Steel roller wheels shall be treated with water or oil to prevent the adherence of the asphalt concrete, and water or oil may be used on pneumatic-tired rollers but the quantity used must not be such as to be detrimental to the surface being rolled.
- C. Final rolling of the top or finish course shall be accomplished with a steel wheel roller, removing all surface imperfections, including indentures made by pneumatic-tired rollers.
- D. Rolling of both the base course and surface course shall be continued until all roller marks are eliminated and a density of at least 96% of the density of a laboratory specimen of the same mixture for both surface course and base course.
- E. In areas not accessible to the roller, the mixture shall be thoroughly compacted with hand operated mechanical tampers. Any mixture that becomes mixed with foreign material or in any way is defective shall be removed, replaced with fresh mixture, and compacted to the density of the surrounding pavement.

3.3 SAMPLING AND TESTING PAVEMENT

- A. Sampling of the compacted asphalt pavement will be taken and tested to determine conformance of the finished pavement with the specified requirements. The Contractor shall replace the pavement at his expense where samples are removed. Six (6) samples including rings and cores to be taken will re required and tested in accordance with these specifications prior to acceptance to verify proper compaction and proper paving depths. Coring of the pavement, and testing of the core samples shall also be paid by the Contractor.
- B. The minimum test requirements for the pavement shall consist of a test for:
 - 1. The gradation of extracted aggregates
 - 2. Density of compacted pavement
 - 3. Asphalt content be extraction (if not previously controlled and verified by tank strap test)
 - 4. The frequency for these tests shall not be less than 1 test in each of the 3 categories for each 500 tons or fraction thereof of asphalt concrete placed and for asphalt concrete (less than 500 tons) placed during one day's run.

3.4 JOINTS

- A. Care shall be exercised in connection with the construction of joints to insure that the surface of the pavement is true to grade and cross-section.
- B. In making the joint along any adjoining edge such as a curb, gutter, or an adjoining pavement and after the hot mixture is placed by the finishing machine, sufficient hot material shall be carried back to fill any space left open. This joint shall be properly "set up" with the back of a rake at proper height and level to receive the maximum compression under rolling. The work of "setting up" this joint shall be performed by competent workmen who are capable of making a correct, clean, and neat joint.
- C. Longitudinal and transverse joints shall be made in a careful manner. Well-bonded and sealed joints are required. Joints between old and new pavements or between successive days' work shall be carefully made in such a manner as to insure a thorough and continuous bond between the old and new surfaces. In the case of surface course, the edge of the old surface course shall be cut back for its full depth so as to expose a fresh surface and, if necessary to obtain a well-bonded joint, shall be painted with a tack coat after which the hot surface mixture shall be placed in contact with it and raked to a proper depth and grade. Before placing mixture against contact surfaces of curbs, gutters, headers, manholes, etc., they shall be painted with a tack coat.
- D. No asphalt concrete surface course shall be placed which cannot be finished within daylight hours of the same day it is laid unless otherwise specified or directed by the Architect/Engineer.

3.5 MANHOLE AND VALVE COVERS

- A. Manholes frames and valve covers shall be adjusted prior to placing the surface course.

3.6 SMOOTHNESS

- A. Upon completion, the pavement shall be true to grade and cross-section. Except at intersections or any changes of grade, when a 10' straight edge is laid on the finished surface parallel to the centerline of the roadway, the surface shall not vary from the edge of the straight edge more than 3/16". Areas that are not within this tolerance shall be brought to grade immediately following the initial rolling. After the completion of final rolling, the smoothness of the course shall be checked, and the irregularities that exceed the specified tolerances or that retain water (bird baths) on the surface shall be corrected by removing the defective work by means of jackhammering and replacing with new material as directed by the Architect/Engineer at the expense of the Contractor. No skin or overlay patches will be acceptable for correcting depression areas.

3.7 LIFTS

- A. Placement of asphalt concrete pavement shall be done in one lift up to three inches (3") of the pavement structure thickness as indicated on the plans.

3.8 TRAFFIC AND LANE MARKINGS

- A. Traffic and Lane Markings: Lay out area and review with Owner before paint application. Apply two coats of alkyd type traffic-lane marking paint over cleaned paving surface. Refer to drawings for handicap and fire lane paint marking.
 - 1. Parking space and general directional arrows or markings - OSHA White
 - 2. Handicap Spaces and International HC Logo - OSHA Blue on White
 - 3. Fire Lanes and No Parking - OSHA Red
 - 4. Cart Storage and restricted curbs as noted - OSHA Yellow

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- B. Apply paint as per manufactures recommendations to cured and clean surface.
- C. Layout stripping pattern and locations with proper surveying devices and measuring devices. Strike arcs and straight lines with chalk or other marking materials to identify locations.
- D. Install paint with mechanical equipment which is designed to provide smooth straight line with hard edges along paint stripe. Hand brush or roller application is not allowed.
- E. Protect paint until it has attained its full set and hardness. Repaint areas as required to achieve full uniform color and appearance. Cover mistakes or rework with coat of pure slurry sealer without aggregate and repaint after sealer has hardened and set.

END OF SECTION 32 1216

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SECTION 32 1313 – CONCRETE PAVING

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Portland cement concrete curbs, walks, gutters, cross gutters, valley gutters, aprons, slope paving and median paving constructed of concrete shall have a minimum 28 day compressive strength of 4500 psi.
- B. Subgrade preparation for concrete curbs, gutters, walks, aprons, alleys, intersections, and slope paving shall conform to the requirements of Section 03313.

PART 2 - EXECUTION

2.1 FORMS

- A. Form material shall be free from warp, with smooth and straight upper edges and, if used for the face of curb, shall be surfaced on the side against which the concrete is to be placed. Timber forms may be used for forming curved sections but shall not be used for straight work unless authorized in writing by the Architect. Metal forms for such work being of a gauge that will provide proper rigidity and strength for the purpose for which they are intended. Wood forms used on curb returns shall be not less than : of an inch in thickness, cut in the length and radius as shown on the plans and held rigidly in place by the use of metal stakes and clamps. The curb face forms shall be cut to conform exactly with the curb face batter, as well as being cut to the required length and radius. In every case, however, the forms shall be of sufficient rigidity and strength and shall be so supported as to adequately resist springing or deflection as a consequence of the placing and tamping of the concrete.
- B. All curb and combined curb and gutter shall be divided into blocks or stones in lengths not to exceed 6' long using metal templates not less than 1/16" nor more than 1/4" thick cut to the same cross-section as the curb or curb and gutter being constructed. Templates shall be securely attached to forms to prevent movement during concrete placement.
- C. Form material shall be thoroughly clean at the time it is used and shall be given a coating of light oil or other suitable material immediately prior to the placing of the concrete.
- D. Forms, except curb back planks, shall be set with the upper edges thereof flush with the specified grade of the finished surface of the adjacent portion of the work and shall be not less than a depth equivalent to the full specified depth of thickness of the concrete to be supported thereby.
- E. Back forms shall be held securely in place by means of stakes driven in pairs, one at the front form and one at the back, at intervals not to exceed 4'; clamps, spreaders, and braces being used in connection therewith to such extent as may be necessary to insure proper rigidity of the forms. Forms for walks, gutters, and similar work shall be firmly secured by means of stakes driven flush with the upper edge of the forms at intervals not to exceed 5'. The stakes shall be of sufficient size and shall be so driven as to properly and adequately support the forms.
- F. Form clamps, specifically designed and manufactured for the curb and gutter to constructed, may be used if, in the opinion of the Architect, they fulfill the requirements hereinabove specified for curb and gutter forms.

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PART 3 -EXECUTION

3.1 PLACING CONCRETE

- A. The concrete shall be placed on a thoroughly dampened subgrade sufficiently moist to insure that no moisture will be absorbed from the fresh concrete.
- B. Surfaces of structures in sidewalks, curbs, and gutters shall be adjusted as necessary prior to placing of concrete to meet the contiguous sidewalk surfaces.
- C. Concrete shall be placed in horizontal layers not to exceed 6" each in thickness, each layer being spaded along the forms and thoroughly tamped. However, if the section is more than 6" in depth, the concrete may be placed to provide the thickness shown or specified, if mechanical internal vibrators are used or if, in the opinion of the Architect, the spading and tamping is sufficient to consolidate the concrete for its entire depth.
- D. After the concrete for walk has been placed between the side forms, a strike-off shall be used to bring the surface to the proper section to be compacted. It shall then be spaded along the form faces and tamped with appropriate tampers not less than 2 times, in order to assure a dense and compact mass, forcing the larger aggregate into the body thereof and bringing to the surface sufficient free mortar for finishing.
- E. After the concrete has been placed and tamped, the upper surface shall be struck off uniformly smooth and true to the specified grade.

3.2 EXPANSION JOINTS

- A. Expansion joints shall be constructed in curbs, walks, and gutters as hereinafter specified, or as noted on the Plans/Details. No such joints shall, however, be constructed in cross gutters or driveway aprons.
- B. Unless otherwise shown on the plans, 1/2" joints shall be constructed in curbs and gutters at the end of all returns except where cross gutters are being constructed. They shall be at the ends of the cross gutter transitions and also along the line of the work at regular intervals of every sixth stone, but not to exceed 36", joints in gutter being continuous with those in adjacent curb. No joints shall be constructed in returns. Where continuous curb and gutter is constructed adjacent to cement concrete pavement, weakened plane joints shall be installed continuous with alternate joints installed in the adjacent pavement, in which case no expansion joints for sidewalks shall be placed at intervals not exceeding 18' with joint filler strips. The weakened plane joints shall be as specified in subsection Transverse Contraction Joints.
- C. Expansion joint filler strips shall be placed in walks at the PT and PC of all walk returns, between walk and a building or structure, in walk returns between the walk and the back of the curb returns, and around all utility pole encountered along the line of the work. At the PT and PC and around utility poles, the joint filler strips shall extend the full depth of the concrete being placed. Joint filler strips between walk and curb shall be the full depth of the walk with the top of the filler strip set flush with the specified grade of the top of the curb. Expansion joint filler strips including those around utility poles shall not be less than 1/2 inch in thickness.
- D. Expansion joint filler strips shall be vertical and shall extend to the full depth and width of the work in which they are installed, being constructed at right angles or radially to the line of the curb or gutter as the case may be. The filler strips shall completely fill these joints at least to within 1/4 of an inch of any surface of the concrete that will be exposed upon completion of the work and must fully extend at least to those surfaces that will not be exposed. However, before the work will be accepted, any joint filler that protrudes beyond a surface that will not be exposed or beyond 1/4 of an inch below a surface that is exposed shall be trimmed off the specified dimension in a neat and workmanlike manner. During the placing and tamping of the concrete, the filler strip shall be held rigidly and securely in proper position.

3.3 FINISHING

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- A. Surfaces of the various items of work shall be finished as specified. Edges of concrete at expansion joints shall be rounded to 1/4 inch radius. Upon completion, the finished surface shall be true to line and grade and free from irregularities.

3.4 CURB

- A. The front forms may be stripped as soon as the concrete has set sufficiently but must be removed before the expiration of 6 hours after pouring. Immediately following the stripping of these forms, Class A mortar, thinned to the consistency of grout, shall be applied to the curb face. If monolithic curb and gutter is being constructed, this mortar shall be applied to the full-exposed face; otherwise, it shall extend for an additional 2 inches below the gutter.
- B. The face and top of the curb shall then be carefully troweled to a smooth and even finish, the top being finished to a transverse slope of 1/4 of an inch toward the front, with both edges rounded to a radius of : of an inch. The troweled surface shall be finished with a fine hair broom parallel with the line of the work.

3.5 WALK

- A. Following the placing of concrete, the surface shall be worked to a true and even grade, free from waves and irregularities. After the preliminary troweling, the initial scoring for the block markings shall be made to a depth of 1 inch in order to insure the scoring depth required. The work shall then be carefully troweled to a smooth and even finish, with the edges rounded to a radius of 1/2 inch, the scoring markings made to the required depth following which it shall be given a fine hair broom finish, applied transversely and remarked when required to insure a neat uniform joint. Troweling may be done with a long handled trowel or "Fresno".
- B. Contraction joints or block joints shall not exceed intervals of 6 feet or as noted on the Plans/Details. Joints shall be made at regular intervals along the line of the work. On straight work, the joints shall be parallel with and at right angles to the line of the work; at curves the joints shall, in general, be along lines concentric with and radial to the proportion of the work in which they are placed. The markings shall be made with jointer tools that will round the edges of the scoring lines to a radius of 1/8 of an inch, with a depth of not less than 1/1/4 inch. The finished joint opening, exclusive of radii, shall not be wider than 1/8 inch. The Contractor will be required to have a sufficient number of jointer tools on the job to accomplish the above specified requirements.
- C. The side forms shall remain in place after completion of the walk until the concrete is sufficiently set but must be removed before the work will be accepted.

3.6 GUTTER

- A. After the concrete has been thoroughly tamped in such manner and to such extent as to force the larger aggregates into the body thereof and bringing to the top sufficient free mortar for finishing, the surface shall be worked to a true and even grade by means of a float, troweled with a long handled trowel or "Fresno" and then longitudinally broom finished, following which the flow line of the gutter shall be troweled smooth for a width of approximately 3 inches and the outer edge rounded to a radius of 1/2 inch.
- B. Side forms shall remain in place until the concrete is sufficiently set, after completion of the gutter, but must be removed before the work will be accepted.
- C. Construction joints and expansion joints and other details of construction shall be as indicated on the plans. The finished surface shall conform to the required roadway section as to both line and grade. The gutter sections will not be opened to traffic until specimen beams have attained a flexural strength of not less than 500 pounds per square inch (AASHTO T 97). When such tests are not conducted, the gutter shall not be opened to traffic until 14 days after the concrete has been placed. In the event that high-early cement is used, the flexural requirements will remain the same as previously stated; however, in lieu of a flexural test and after a minimum of 7 days curing has taken place, the Architect will determine when sections may be opened to traffic.

3.7 CONCRETE SLOPE PAVEMENT

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- A. All subgrade preparation required for this item shall be done in accordance with applicable provisions of Section 312002 with the exception that minimum density requirements will be 90% of maximum density as determined by ASTM D 698 in all cases, instead of 95% of maximum in the top 6 inches or 12 inches of compacted fill.
- B. Wire reinforcing mesh shall be included and shall be 6"x 6" No. 6 gauge fabric. Additional steel, if required, will be included as shown on the plans and shall be included as part of the item.
- C. Thickness of concrete shall be 4 inches nominal, and construction joints shall be required at 18 foot intervals maximum. Concrete shall be screeded and finished with wood float or equivalent to a plane surface having no variation when measured with a 10 foot straight edge in excess of 1/4 inch, unless a curvilinear surface is designated for a particular job. All concrete work shall be in accordance with Section 03200.

3.8 CURING

- A. After the completion of the finishing operations, all concrete shall be sprayed with concrete curing compound. The surface of the concrete shall be kept thoroughly damp between the completion of the finishing operations and the application of the curing compound. No curing compound will be used on sidewalk.
- B. The curing compound shall be applied under pressure, by means of a spray nozzle, in such manner and quantity as to entirely cover all exposed surfaces of the concrete with a uniform film.

3.9 DRIVEWAY APRONS

- A. Driveway aprons shall be provided in new curves at all existing driveways along the line of the work and at locations shown on the plans or as directed by the Architect.
- B. The location and construction details for aprons shall conform to applicable local ordinances and the drawings and general provisions of Contract.
- C. Where walk is to be constructed across aprons, the thickness of the walk shall be not less than 6 inches, unless otherwise specified or shown on the plans.

3.10 DRAINAGE OUTLETS THROUGH CURB

- A. The Contractor will be required to provide suitable outlets through the new curb for all existing building drains along the line of the work.

3.11 MISCELLANEOUS TYPES OF CURB, GUTTERS, SIDEWALKS

- A. Extruded type concrete curb and gutter, precast curb and gutter sections, cut stone curbs, brick sidewalks, flagstone sidewalks, etc. will be permitted where approved by the Architect and in accordance with the plans.

3.12 REPAIRS AND REPLACEMENT

- A. New work that is found to be defective or damaged prior to the acceptance of existing work damaged by the Contractor's operation shall be repaired or replaced by the Contractor at no expense to Owner; sidewalk that is to be replaced shall be neatly saw-cut. The minimum size slab that is removed and replaced shall be 5 feet long and for the full width of the walk. Curb and gutter shall be saw-cut on a neat line at right angles to the face of the curb to at least 2/3 of the full section of curb and/or gutter on either side of defective or damaged portion.

3.13 TESTS

- A. Testing procedures shall be as provided elsewhere in the specifications.

3.14 BACKFILLING AND CLEANUP

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- A. Backfilling to the finished surface of the newly constructed improvement must be completed before acceptance of the work.
- B. Upon completion of the work, all earth or burlap covering shall be removed, the surface of the concrete thoroughly cleaned, and the site left in a neat and orderly condition, including disposal of excess materials and earth.

END OF SECTION 32 1313

SECTION 32 32 23
CONCRETE SEGMENTAL RETAINING WALL SYSTEM

PART 1: GENERAL SPECIFICATIONS

1.01 Work Included

- A. Work shall consist of furnishing and constructing a Rockwood Classic 8™ unit segmental retaining wall in accordance with these specifications to the lines and grades shown on the construction plans and drawings. Alternate wall systems will not be considered.
- B. Work includes preparing foundation soil, furnishing and installing leveling pad, unit drainage fill, and backfill to the lines and grades shown on the construction plans and drawings.
- C. Work includes furnishing and installing geogrid soil reinforcement of the type, size, location, and lengths as designated on the construction drawings.

1.02 Related Sections

- A. Section _____ - Site Preparation (Not applicable)
- B. Section _____ - Earthwork (Not applicable)

1.03 Reference Documents

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM C 1372 Standard Specification for Segmental Retaining Wall Units
 - 2. ASTM C 140 Sampling and Testing Concrete Masonry Units
 - 3. ASTM D 422 Particle Size Analysis
 - 4. ASTM D 698 Laboratory Compaction Characteristics of Soil -Standard Effort
 - 5. ASTM D 4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils
 - 6. ASTM D 4595 Tensile Properties of Geotextiles - Wide Width Strip
 - 7. ASTM D 5262 Unconfined Tension Creep Behavior of Geosynthetics
 - 8. ASTM D 3034 Polyvinyl Chloride Pipe (PVC)
 - 9. ASTM D 1248 Corrugated Plastic Pipe
 - 10. ASTM D 1262 Freeze-Thaw Durability of Concrete Units
 - 11. ASTM D 6638 Determining Connection Strength Between Geogrid and Segmental Unit
- B. Geosynthetic Research Institute (GRI)
 - 1. GRI-GG4 Determination of Long Term Design Strength of Geogrid
 - 2. GRI-GG5 Determination of Geogrid (soil) Pullout
- C. National Concrete Masonry Association (NCMA)
 - 1. NCMA SRWU-2 Test Method for Determining Shear Strength of SRW

1.04 Submittals/Certification

- A. Prior to the start of work, the Owner shall obtain construction drawings and design calculations prepared and stamped by a Professional Engineer registered in the state of the proposed retaining wall. The Owner or Contractor should have the proposed retaining wall permitted by the appropriate governing authorities.

- B. Prior to start of work, the Contractor shall submit a manufacturer's certification for each of the retaining wall system components. The certification shall state that the component meets the requirements of this specification.

1.05 Quality Assurance

- A. The Contractor shall be competent and experienced in the construction of reinforced segmental retaining walls. The Contractor's competency and experience shall be determined by the Owner thru demonstration of successfully completed projects and/or completion of a nationally recognized course of instruction, such as the NCMA's *Segmental Retaining Wall Installers Education Program*.
- B. The Design Engineer shall be competent and experienced in the design and analysis of reinforced segmental retaining walls. The Design Engineer shall provide proof of current professional liability insurance with an aggregate coverage limit of not less than \$1,000,000.
- C. The Owner or Contractor shall provide independent soil testing and quality assurance inspection and testing during earthwork and wall construction operations. The Owner's quality assurance program does not relieve the Contractor of responsibility for quality control and wall performance.

1.06 Delivery, Storage and Handling

- A. The Contractor shall check all materials upon delivery to assure that the proper type, grade, color, and certification have been received.
- B. The Contractor shall protect all materials from damage due to jobsite conditions and in accordance with manufacturer's recommendations. Damaged materials shall not be incorporated into the work.

PART 2: COMPONENTS

2.01 Definitions

Block - a Rockwood Classic 8™ concrete segmental retaining wall unit.

Cap - a Rockwood Classic Universal Cap™ concrete segmental retaining wall unit.

Geogrid - a geosynthetic material manufactured for the primary purpose to reinforce soil. Same as *geosynthetic reinforcement* and *soil reinforcement*.

Filter Fabric – a geosynthetic material manufactured for the primary purpose to filter soils from water. Same as *geosynthetic fabric*.

Drainage Fill – crushed rock aggregate that is placed within and immediately behind the block. Same as *core fill* and *drainage rock*.

Backfill - compacted soil that is placed behind the blocks and drainage fill and within the reinforced soil volume of the retaining wall as outlined on the plans. Same as *reinforced backfill* and *infill soil*.

Base Leveling Pad – aggregate base material or concrete used as a foundation for the blocks. Same as *leveling pad*.

Drainage Pipe – typically, a 4" diameter PVC or corrugated HDPE pipe, that is perforated or slotted to accept water from the surrounding soils. Same as *drain tile*.

2.02 Blocks and Caps

- A. Blocks shall be Rockwood Classic 8™ concrete segmental retaining wall units. The Owner shall specify the color and face finish.
- B. Caps shall be Rockwood Classic Universal Cap™ concrete segmental retaining wall units.
- C. Blocks and caps shall conform to the following requirements:
 - 1. Block dimensions shall be: H = 8", L = 18", W = 12".
 - 2. Blocks shall have a built in lug protruding 5/8" from the base of the block.
 - 3. Cap dimensions shall be: H = 4", L_{FRONT} = 18", L_{REAR} = 14", W = 10.5"
 - 4. Permissible variations in block/cap dimensions shall be per ASTM C1372.
 - 5. The finish and appearance of blocks/caps shall be per ASTM C 1372.
 - 6. Strength and absorption requirements shall be per ASTM C 1372.
 - 7. The unit weight (weight per unit volume) of an in-filled block shall be greater than 115 pcf.

2.04 Base Leveling Pad Material

- A. Base leveling pad material shall consist of compacted aggregate base or non-reinforced concrete, as shown on the construction drawings and/or determined based upon field conditions. Aggregate base material shall meet the following gradation in accordance with ASTM D-422:

<u>Sieve Size</u>	<u>Percent Passing</u>
1 inch	100
no. 4	35 – 70
no. 200	0 - 15

2.05 Drainage Fill Material

- A. Drainage fill material shall consist of crushed rock meeting the following gradation in accordance with ASTM D-422:

<u>Sieve Size</u>	<u>Percent Passing</u>
3 inch	100
¾ inch	75-100
no. 4	0 – 25
no. 200	0 - 5

2.06 Backfill

- A. Backfill shall consist of soil that is free of debris and deleterious material. Unless the Designer specifies otherwise and accounts for in his/her design analysis, backfill shall meet the following gradation in accordance with ASTM D-422:

<u>Sieve Size</u>	<u>Percent Passing</u>
3 inch	100
1 inch	50 - 100
no. 4	20 – 100
no. 40	0-75
no. 200	0-35

- B. Backfill shall have a Plasticity Index (PI) < 15 and Liquid Limit (LL) < 40 per ASTM D 4318.
- C. The Contractor shall obtain independent laboratory test results to verify that the backfill meets the requirements of 2.06 A. and B.

2.07 Geogrid

- A. The geogrid, as specified in the construction plans and drawings, shall be manufactured specifically for soil reinforcement applications.

2.08 Drainage Pipe

- A. If required, drainage pipe shall be PVC pipe manufactured in accordance with ASTM D-3034 or corrugated HDPE pipe manufactured in accordance with ASTM D-1248. Drainage pipe shall be perforated, slotted, or non-perforated as shown in the construction drawings.

PART 3: EXECUTION

3.01 Excavation

- A. The Contractor shall excavate to the lines and grades shown on the construction drawings. The Contractor and/or Owner's representative shall inspect the excavation and approve/disapprove its competency as a foundation soil prior to placement of the leveling pad or backfill.
- B. If remedial work is required to improve the foundation soil, the Owner shall compensate the Contractor as mutually agreed.
- C. The foundation soil shall be compacted to a minimum of 95 % of the maximum density per ASTM D-698.
- D. If seepage or evidence of past seepage is observed in the excavation, the Contractor shall consult the Owner and Design Engineer in order to add or modify a drainage system to mitigate future seepage.

3.02 Base Leveling Pad

- A. Leveling pad material shall be placed to the lines and grades shown on the construction drawings, to a minimum thickness of 6 inches, extending laterally a minimum of 6", both in front of and behind the block.

- B. Leveling pad materials shall be compacted to a minimum of 95 % of the maximum density per ASTM D-698.
- C. Leveling pad shall be prepared to insure full contact to the base surface of the block.

3.03 Block Installation

- A. First course of units shall be placed on the leveling pad at the appropriate line and grade as shown on the construction drawings. Alignment and level shall be checked in all directions. Ensure that all units are in full contact with the leveling pad and properly seated.
- B. Place the front of units side-by-side. Do not leave gaps between adjacent units. Layout of corners and curves shall be in accordance with manufacturer's recommendations.
- C. Place drainage fill within and behind blocks. Place backfill behind drainage fill in lifts no greater than 6 to 12 inches and compact to a minimum of 95 % of the maximum density per ASTM D-698. After placement of backfill, compact drainage fill by probing.
- D. Do not stack more than two courses of block prior to placing and compacting drainage fill and backfill.

3.04 Geogrid Installation

- A. Geogrid shall be oriented with the highest strength axis perpendicular to the wall alignment.
- B. Geogrid shall be placed at the type, lengths, and elevations shown on the construction drawings or as directed by the Design Engineer.
- C. The geogrid shall be laid horizontally from within 2 inches of the face of the block back across compacted backfill. Place the next course of blocks over the geogrid. The geogrid shall be pulled taut and anchored prior to placing additional drainage fill or backfill.
- D. Geogrid shall be continuous throughout their embedment length. Geogrid shall be placed side-by-side or overlapped with 3" backfill between to provide 100% coverage at each designed geogrid level where possible. Geogrid shall not be spliced along its designed embedment length.

3.05 Backfill Placement

- A. Backfill shall be placed, spread, and compacted in such a manner that minimizes the development of slack and installation damage in the geogrid.
- B. Backfill shall be placed and compacted in lifts not to exceed 6 inches where hand compaction is used, or 8 to 12 inches (depending on soil type and soil processing) where heavy compaction equipment is used. Lift thickness shall be decreased to achieve the required compaction.
- C. Backfill shall be compacted to 95% of the maximum density per ASTM D698. The moisture content of the backfill material, prior to and during compaction, shall be uniformly distributed throughout each layer and shall be within 20% of the optimum moisture content as determined by ASTM 698.

- D. Only lightweight hand-operated equipment shall be allowed within 4 feet from the face of the block.
- E. Tracked construction equipment shall not be operated directly upon the geogrid. A minimum of 6 inches of backfill is required over the geogrid prior to operation of tracked vehicles over the geogrid. Tracked vehicle turning should be kept to a minimum to prevent tracks from displacing the backfill and damaging the geogrid.
- F. Rubber tired equipment may pass over geogrid at slow speeds, less than 10 mph. Sudden braking and sharp turning shall be avoided.
- G. At the end of each day's operation, the Contractor shall slope the last lift of backfill away from the blocks and drainage fill in order to direct runoff away from wall face. The Contractor shall ensure surface runoff from adjacent areas does not enter the wall construction site.

3.06 Drainage System Installation

- A. Drainage systems, both internal to the wall and surficial, shall be determined based upon site conditions by the Contractor in consultation with the Owner and the Design Engineer.
- B. Within the time of construction, the Contractor must ensure that all surficial drainage is directed away from the wall system by use of drainage swales, area drains, or other competent measures.
- C. Within the lifetime of the wall, the Owner must ensure that all surficial drainage is directed away from the wall system.

3.07 Cap Installation

- A. Caps shall be adhered to underlying blocks and caps with Super-Stik™.

3.08 As-Built Construction Tolerances

- A. **Vertical Alignment:** the top of wall shall be within 0.1' (1.2") from design grade.
- B. **Wall Batter:** within 2 degrees of design batter, excluding a negative batter.
- C. **Horizontal alignment:** the bottom of the wall (B.W.), at design B.W. grade, shall within 1 foot of design line.
- D. **Maximum horizontal gap** between erected blocks shall be 1/2 inch.

3.09 Field Quality Control

- A. The Owner and Contractor shall engage inspection and testing services (quality control) during construction to ensure project specifications are met. The lack of quality control by the Owner does not relieve the Contractor from meeting project specifications.
- B. Quality control should include, but not be limited to: foundation soil inspection; verification of geotechnical design parameters; and verification that construction is in general compliance with the design drawings and project specifications. *(Quality Assurance is usually best performed by the site geotechnical engineer.)*

- C. Only qualified and experienced technicians and engineers shall perform testing and inspection services.

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SECTION 32 3113 - CHAIN LINK FENCING AND GATES

GENERAL

SCOPE OF WORK:

- A. This work shall consist of the construction of fences to stand to the height above grade when erected as shown on the Drawings.

PRODUCTS

MATERIALS:

- A. All fence appurtenances to be galvanized.

FABRIC:

- A. Galvanized after chain link fabric heavily zinc coated by hot-dip process after weaving 72 inches high No.11 gauge wire woven in a 2 inch mesh. Top selva to have a twisted and barbed finish; bottom selva to have a twisted and barbed finish.

GALVANIZED TEST:

- A. Chain line fabric to with-stand 6 one-minute immersions under the PREECE test.

LINE POSTS:

- A. 1.875" x 1.625" C-Section O.D. Weighing 2.40 lbs/ft. (ASTM A526), or 2.375" Tuf 40 pipe weighing 3.12 lbs/ft., or 2.875" SCH 40 pipe weighing 3.65 lbs/ft.
- B. All posts to be hot-dip galvanized inside and out.

TERMINAL POST:

- A. End, corner, and pull posts 2.875" Tuf 40 pipe O.D. - 4.64 lbs. per lineal foot, or 2.875" SCH 40 pipe weighing 3.12 lbs/ft.
- B. All posts to be hot-dip galvanized inside and out.

GATE POSTS:

- A. Hot-dip galvanized pipe inside and out according to the following tabulation.

GATES:

- A. Gate frames to be made of 2" O.D. tubular material hot-dip galvanized inside and out. Corners to have mortised joints for proper fit (hammering of pipe not acceptable). Welds to be continuous around pipe. Fabric to be the same as fence. Gates to be complete with malleable iron pipe and socket hinges, catch, stops, and center rest. Hinges to permit gate to swing back against fence - 180° if required. All accessories to be galvanized.

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GATE FRAME	GATE OPENING	GATE POST	WEIGHT PER LIN FT.
1-7/8" O.D. 1.74 lb. Per/Ft.	Single to 6' or Double 12' incl....	2-7/8" O.D.	4.64
1-7/8" O.D.	Single over 13' to 18' or Double over 26' to 36' incl....	6-5/8" O.D.	18.97

BARBED WIRE:

- A. Three lines of 4-point pattern, each composed of 2 strands of No. 12½ gauge galvanized wire (exterior fence only).

EXECUTION

INSTALLATION:

- A. The Contractor shall perform such clearing and grubbing as may be necessary to construct the fence to the required grade and alignment. At location where breaks in a run of fencing are required or at intersections with existing fences, appropriate adjustment in post spacing shall be required or at intersections with existing fences, appropriate adjustment in post spacing shall be made to conform to the requirements for the type of closure indicated. When the plans require that posts, braces, or anchors be embedded in concrete, the Contractor shall install temporary guys or braces as may be required to hold the posts in proper position until such time as the concrete has set sufficiently to hold the posts. Unless otherwise permitted, no materials shall be installed on posts or strain placed on guys and bracing set in concrete until 7 days have elapsed from the time of placing of the concrete. Posts shall be set to the required depth and alignment. Cutting of the tops of posts shall be allowed only with the approval of the Engineer and under the conditions specified by him. Wire or fencing of the size and type required shall be firmly attached to the posts and braced in the manner indicated. All wire shall be stretched taut and be installed to the required elevations.
- B. Chain link fabric shall not be attached to posts until the concrete footings have completely set. Pull posts shall be spaced at intervals not to exceed 500 feet. End posts shall be not less than 2.876 inches in outside diameter and braced in the same manner as corner posts. Braced tension rods or cables, hardware, and appurtenances shall be installed as shown on the plans.
- C. Chain link fabric shall be stretched by mechanical stretcher or other device designed for such use. Stretching by motor vehicle will not be permitted.

TOP RAIL:

- A. Hot-dip galvanized inside and out 1-5/8" O.D. tubular material; provided with couplings every 21 feet.

FITTINGS:

- A. Hot-dip galvanized inside and out. All fittings to be malleable, cast iron or pressed steel.

TIE WIRE:

- A. Fabric to be fastened to line posts with tie wires spaced approximately 24 inches apart.

FRAMEWORK MATERIAL:

CHAIN LINK FENCING AND GATES

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- A. All posts, rails, and braces heavily hot-dip galvanized inside and out.

CONCRETE FOOTINGS:

- A. All posts shall be set in cylindrical concrete foundations 12" in diameter, 36" depth. Holes shall be excavated for the full depth of the post.

**SECTION 32 93 00
PLANTS**

PART 1 GENERAL

1.1 SUMMARY:

- A. Work under this section consists of the planting of trees, shrubs, and ground covers, including the furnishing of all labor, equipment, and materials and performing all work in connection therewith in accordance with the Drawings and Specifications.

1.2 PLANT NAMES:

- A. The botanic and common names used for the plants called for on the Drawings are generally in conformity with the approved names given in Standardized Plant Names, 1980 Edition, published by The American Joint Committee on Horticultural Nomenclature. The names of varieties not included therein are generally in conformity with the names accepted in the nursery trade.

1.3 PLANT MATERIAL SUBSTITUTIONS:

- A. Plant material substitutions shall not be made without the written permission of the Owner's Representative. The use of materials differing in kind, quality or size from that specified shall be allowed only after the Owner's Representative is convinced that all means of obtaining the specified materials have been exhausted. At the time bids are submitted, the Contractor is assumed to have located the materials necessary to complete the job as specified. All requests for substitutions shall be submitted no later than five (5) working days prior to the opening of bids.

1.4 SUBMITTALS:

- A. Furnish samples of the following prior to construction:
 - 1. Backfill amendment
 - 2. Soil conditioner
 - 3. Mulch
- B. Furnish supplier literature and chemical analysis of the following prior to construction:
 - 1. Backfill amendment
 - 2. Soil conditioner
- C. Furnish the following the same day materials are delivered to the project site:
 - 1. Delivery tickets indicating quantity of material delivered for:
 - a. Backfill amendment
 - b. Soil conditioner

PART 2 - MATERIALS

2.1 PLANT MATERIALS:

- A. A complete plant list, including quantities, sizes and other requirements is shown on the Drawings. In the event that discrepancies occur between quantities of plants indicated in the plant list and on the planting plan, the plant quantities indicated on the planting plan shall govern.

2.2 PLANT MATERIAL QUALITY:

- A. Plant material quality, size and condition shall be in accordance with American Standard for Nursery Stock, 1986, as published by the Committee on Horticultural Standards of the American Association of Nurserymen, Inc., the Drawings, and the following requirements:
 - 1. All plants shall be typical of their species or variety. All plants shall have normal, well developed branches and vigorous root systems. They shall be sound, healthy, vigorous, and free from defects, disfiguring knots, abrasions of the bark, sunscale injuries, plant diseases, insect eggs, borers, and all other forms of infections.
 - 2. Unless otherwise stated on the Drawings or approved by the Owner's Representative, all plants shall be nursery grown and shall be tagged with nursery labels indicating species and variety.
 - 3. Container grown plant material shall have been grown in its delivery container for not less than six (6) months, but for not more than two (2) years. Any rootbound material will not be accepted.
 - 4. Multi-stem: All countable stems, in aggregate, shall average the size specified. To be considered a

stem, the division of the trunk shall be no more than six inches from ground level.

5. Balled and burlapped plant material shall have a solid ball of earth of minimum specified size held in place securely by burlap and stout twine or rope. Light poultry binding is acceptable; stout wire or wire baskets are acceptable only as a temporary means for securing burlap until tree is in place. Broken or loose balls will be rejected.
6. Unless specifically noted on the Drawings, all trees shall have a single trunk that is straight and free of “dog legs”, “crooks”, “Y-crotches”, or other disfiguring shapes. The central leader of all trees shall not have been pruned. Trees with double leaders are not acceptable.
7. All plant material shall have a uniform shape around its complete circumference. Plant material with irregular branching patterns or with branching patterns more highly developed on one side than on other sides will not be accepted.
8. All plant material shall be reviewed by the Owner’s Representative at the Contractor’s yard prior to delivery to the job site. All material shall then be reviewed at the job site prior to planting and after planting.
9. At the option of the Contractor, the Owner’s Representative will review plant material at a wholesale nursery of the Contractor’s choice prior to delivery of materials to the Contractor’s yard. However, at no additional expense to the Owner, the Contractor shall be responsible for all travel expenses incurred by the Owner’s Representative for any travel outside of the Albuquerque or Santa Fe metropolitan area.
10. The Owner’s Representative shall be the judge of the quality and acceptability of all plant material. All rejected material shall be immediately removed from the site and replaced with acceptable material at no additional cost to the Owner.

2.3 PLANTING SOIL MIXTURE:

- A. Planting Soil Mixture shall be a mixture of one part backfill amendment to two parts existing soil.

The backfill amendment shall consist of:

1. 70% by volume, organic compost. Compost to be screened to 1/2" minus, pH not to exceed 7.3. Electrical conductivity (EC) of compost not to exceed 3.5 MS/cm. Percentage of organic matter shall be not less than 80%, tested by simple combustion. Total nitrogen (TKN+NO₃-N) shall be not less than 1%, by weight. Carbon to nitrogen ratio of compost shall not exceed 50:1.
2. 30% by volume, “Moisture-lite” (clean, screened, white vitric tuff, graded to 3/16" x 5/16").
3. Components to be homogeneously mixed, in ten cubic yard batches to provide a uniform product, free from weed seeds, sticks, rocks, or other deleterious material.
4. The backfill amendment shall be as produced by:
Gro-Well, Inc.
9000 Bates Rd., SW
Albuquerque, NM 87105
(505) 877-8670
Or equal.
5. Each Delivery shall have a load ticket. The load ticket shall list:
Type of Mixture
Source of Mixture.
Approximate volume of load.
Date of delivery or loading.
Name of individual representing the source.
Ticket shall be collected and provided to the Owner’s Representative.

2.4 SOIL CONDITIONER:

- A. Shall be granulated 85% sulfur.

2.5 MULCH:

- A. Mulch shall be as specified on the Drawings.

PART 3 - EXECUTION

3.1 PLANTING OPERATIONS:

- A. Prior to planting operations, landscape areas shall be cleared of rocks and lumps greater than 1" diameter, vegetation, and debris to a minimum depth of 12" and finish grading shall be complete. Planting operations shall be performed only during favorable weather conditions in accordance with accepted practice.
- B. In any one day, only those plant materials intended to be planted that day shall be delivered to the project site. Unless otherwise approved by Owner's Representative, all plant materials shall be located where shown on the plan except when adjustments due to field conditions are required. The location of all trees and shrubs shall be staked by the Contractor and reviewed by the Owner's Representative prior to installation. Tree locations shall be represented by using 1" x 2" x 12" wood stakes or colored flags. The name of the tree shall be indicated on the stake or flag so it is readily identified. Shrub locations shall be determined by colored flags or by placement of containerized plant material.

3.2 PLANTING:

- A. All planting and backfilling shall be performed in accordance with accepted nursery practice, the Drawings, and the following requirements:
 - 1. The Contractor shall take care when backfilling planters to provide adequate compaction of the fill material in order to prevent settling.
 - 2. Prepare all planting pits and install plants as shown on Drawings. Plants shall be set plumb and straight.
 - 3. Remove wire basket, wood box, plastic, twine, and/or rope prior to backfill. Remove burlap except from bottom of root ball prior to backfill.
 - 4. Backfill for planting pits shall consist of the specified planting soil mixture and .16 pounds soil conditioner per cubic foot of backfill. The plant shall be positioned in the hole, and backfilled. The backfilling shall be completed, and material tamped. When pit is nearly filled, water thoroughly and allow water to soak away. If settling of backfill occurs after watering, add more backfill to bring to finish grade.
 - 5. After completion of planting, all trees shall be pruned at the direction of the Owner.

3.3 MULCHING:

- A. Mulching shall be completed as indicated on the Drawings.

3.4 MAINTENANCE AND PROTECTION:

- A. Maintenance and protection of trees, shrubs, and ground covers shall begin immediately following the installation of each plant and shall continue until the entire project is accepted. Maintenance shall include watering, weeding, cultivating, removal and replacement of dead plant material, removal of debris, resetting of trees to upright positions, restoration of earth basins, and such other operations as may be necessary for the health of the planted stock and the general appearance of the landscaped areas. Maintenance and protection shall include repair of damage to plants and replacement of severely damaged plants resulting from trespass, erosion (including watering), weather, vandalism, disease and other hazard.

3.5 WARRANTY:

- A. All plant materials shall be guaranteed to be in a live, healthy, and normal growing condition from the date of final acceptance by the Owner's Representative through one twelve month growing season. The Contractor shall not be held responsible for replacement of plants and materials lost through vandalism and/or other destruction after contract final acceptance.
- B. The Contractor shall monitor the condition of the landscape at regular intervals during the warranty period to verify that the landscape is receiving proper maintenance. Frequency of monitoring visits shall be as required to ensure proper maintenance. If at any time during the warranty period the Contractor should encounter at the site conditions unfavorable to the health of the planted stock, he shall notify the Owner and Owner's Representative of such in writing. Inadequate or improper maintenance by the Owner during the warranty period will not relieve the Contractor of his warranty obligation, unless such improper maintenance continues beyond the date the Contractor has notified the Owner and Owner's Representative.
- C. Plant materials that are dead or in an unhealthy, impaired growth condition during the warranty period shall be removed and replaced by the Contractor as directed by the Owner's Representative at no additional cost to the Owner. Replacement material shall be of equal quality, size, and species as that which is being replaced and shall be approved by the Owner's Representative prior to planting. Plants replaced during the first six months

of the warranty period shall be under warranty until the end of the warranty period. Plants replaced after the first six months of the warranty period shall be under warranty for six months after the replanting date.

3.6 REVIEWS:

- A. The following reviews shall be the minimum required reviews during the course of construction. Additional reviews shall be made at any time at the discretion of the Owner's Representative.
- B. It shall be the responsibility of the Contractor to notify the Owner's Representative, in writing, 48 hours in advance of each required review.
- C. The sequence of required reviews shall not be changed from the sequence listed below. The Contractor shall not proceed with the work of the next sequence without approval of the work of the previous sequence.
 - 1. Review plant material at Contractor's yard prior to delivery to job site.
 - 2. Review staked locations of material prior to planting.
 - 3. Review of planting hole and planting soil mixture preparation.
 - 4. Review plant material at the job site prior to and during planting.
 - 5. Review at final project completion.
 - 7. Review 11 months after final project acceptance.

SECTION 335000
SITE NATURAL GAS DISTRIBUTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pipe materials.
 - 2. Pipe installation.
 - 3. Valves and pressure regulators.

1.2 SUBMITTALS

- A. Product Data:
 - 1. Pipe: Submit manufacturers catalog data including pipe characteristics, ratings, certification and compliance.
 - 2. Valves, meters and pressure regulators: Submit manufacturers catalog information with valve data and ratings for each service.
- B. Manufacturer's Installation Instructions: Submit installation instructions for material and equipment.
- C. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.3 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit spare parts lists and maintenance procedures.
- B. As Built Drawings: Include as-built drawings noting any variance to design drawings routing and burial depth, utility crossings, easements and statement of compliance to all utility company specifications.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with utility company specifications and NFPA 54.
 - 1. Maintain one copy of each document on site.

1.5 WARRANTY

- A. Furnish one year manufacturer warranty for all equipment.

PART 2 PRODUCTS

2.1 PIPES, TUBES AND FITTINGS

- A. Manufacturers:
 - 1. Performance Pipe Yellowstripe 8300 series
 - 2. Substitutions: Not Permitted
- B. Natural Gas Piping, Buried:
 - 1. High Density Polyethylene Pipe (HDPE): ASTM D2513, NSF Gas, DOT 49 CFR 192, SDR 11.5, with socket type fittings and fusion welded joints.
- C. Natural Gas Piping, above Grade:
 - 1. Steel Pipe: ASTM A53/A53M, Grade B, Schedule 40 black, with malleable iron or forged steel fittings, screwed or welded.

2.2 VALVES

- A. Manufacturers:

1. American Valve
 2. Red-White Valve Corp.
 3. Milwaukee Valve
 4. Substitutions: Permitted.
- B. Plug Valves:
1. Up to 2 inches: Bronze body, bronze tapered plug, non-lubricated, Teflon packing, threaded ends.
 2. Over 2 inches: Cast iron body and plug, pressure lubricated, Teflon packing, flanged ends.
- C. Relief Valves:
1. Bronze body, Teflon seat, stainless steel stem and springs, automatic, direct pressure actuated capacities ASME certified and labeled.
- D. Flanges, Unions, and Couplings:
1. Pipe Size 2 inches and Under: Malleable iron unions for threaded ferrous piping; bronze unions for copper pipe, soldered joints.
 2. Pipe Size Over 2 inches: Forged steel flanges for ferrous piping; bronze flanges for copper piping; preformed neoprene gaskets.
 3. Grooved and Shouldered Pipe End Couplings: Malleable iron housing, C-shape elastomer composition sealing gasket, steel bolts, nuts, and washers.
 4. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.3 GAS RISERS

- A. Anodeless gas service risers:
1. Manufacturers:
 - a. Hubbbell
 - b. Elster
 - c. RW Lyall
 - d. Substitutions: Permitted.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify excavations are to required grade, dry, and not over-excavate.

3.2 PREPARATION

- A. Ream pipe and tube ends. Remove burrs.
- B. Remove scale and dirt, on inside and outside piping before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.3 INSTALLATION – GAS RISER ASSEMBLY

- A. Paint all exposed exterior above grade steel piping.
- B. Install dielectric connections wherever jointing dissimilar metals.
- C. Install unions downstream of valves and at equipment or apparatus connections.

- D. Route piping parallel to building structure and maintain gradient.
- E. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.
- F. Provide support for utility meters in accordance with requirements of utility company.
- G. Provide capped tee fittings upstream and downstream of all new gas pressure regulators which do not contain vent limiting devices.

3.4 INSTALLATION - VALVES

- A. Install valves with stems upright or horizontal, not inverted.
- B. Install valves for throttling or manual flow control services.
- C. Valves buried with pipeline shall be located in valve boxes as approved by local utility company

3.5 INSTALLATION - DISTRIBUTION PIPING

- A. Install natural gas distribution piping in accordance with NFPA 54.
- B. Provide clearance for installation and access to valves and fittings.
- C. Install identification for underground piping in accordance with utility company standards.
- D. Establish elevations of buried piping to provide not less than 1.5 ft of cover for service lines, 36" for distribution lines.
- E. Pipe vents from gas pressure reducing valves to outdoors and terminate in weatherproof hood.
- F. Test natural gas piping in accordance with NFPA 54 and utility company standards.

3.6 GAS UTILITY CONNECTIONS

- A. Coordinate with local gas company to install new gas service to new master meter and regulator assembly. The cost for this service shall be included in the contractor's bid. All trenching, backfill and surface replacement shall also be included in the contractors bid.

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SECTION 33 4100 - STORM UTILITY DRAINAGE PIPING

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. The construction items, specified in this section, are common to storm sewer pipe installation, pipe type culverts and pre-cast manhole storm drain systems.
- B. Corrugated polyethylene and/or PVC pipe will be used for storm sewer pipe installations or pipe type culverts.

1.2 REFERENCES

AASHTO

M 294M-98 MP6-95

ASTM

F477-93 F405-89
F677-35

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Pipe: Pipe and fittings shall be corrugated polyethylene pipe and/or PVC.

2.2 CERTIFICATION

- A. The OWNER/ENGINEER will be supplied with a certification on each item or type of material required in the sewer line, as to that item meeting the specifications and/or the reference specifications before that item is installed.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Pipe and appurtenances shall be new and unused. The type of pipe to be installed shall be as approved by these specifications or unless otherwise shown on the drawings. Pipe and appurtenances shall be handled in such a manner as to insure delivery to the trench in sound, undamaged condition. Particular care shall be taken to prevent damage to any pipe coating.
- B. The interior of the pipe shall be thoroughly cleaned of foreign material before being lowered into the trench and shall be kept clean during construction operations. When work is not in progress, the open ends of pipe shall be securely closed so that no foreign materials will enter the pipe. Any section of pipe found to be defective before or after laying shall be replaced with sound pipe, or repaired in a manner satisfactory to the ENGINEER, without additional expense to the OWNER.
- C. The CONTRACTOR shall install a plug in the new sewer at any point of connection to an existing system. The plug shall remain in place until the ENGINEER authorizes its removal in writing. The CONTRACTOR shall not flush or otherwise discharge any flow into an existing system unless approved in writing by the ENGINEER.
- D. Pipe shall be laid to line and grade as shown on the plans and as staked in the field. The bottom of the trench shall

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be graded and prepared to provide a firm and uniform bearing through out the entire length of the pipe barrel. Suitable excavation shall be made to receive the bell of the pipe and the joint shall not bear upon the bottom of the trench. All adjustment to the line and grade shall be made by scraping away or filling in with pipe zone material under the body of the pipe, and not by wedging or blocking. When connections are to be made to any existing manhole, pipe, or other improvements, the actual elevation or position of which cannot be determined without excavation, the CONTRACTOR shall excavate for and expose the existing improvement before laying the connecting pipe or conduit. When existing underground improvements may reasonably be expected to conflict with the line or grade established for the new sewer line, the ENGINEER shall request and the CONTRACTOR shall excavate as necessary to expose and locate such potentially conflicting underground improvements prior to laying the new pipe.

- E. Any adjustment in line or grade which may be necessary to accomplish the intent of the plans will be made, and the CONTRACTOR will be paid for any additional work resulting from such change in line or grade in the manner provided for in the General Conditions.
- F. CONTRACTOR shall submit to the ENGINEER the proposed method for making connections to existing manholes. Connection methods will be dependent upon manhole size and pipe sizes. Unnecessary damage to the existing manhole should be avoided.
- G. Pipe shall be laid upgrade in a continuous operation from structure to structure, with the socket or collar ends of the pipe upgrade unless otherwise permitted by the ENGINEER. Concrete pipe with elliptical reinforcement shall be laid with the minor axis of the reinforcement cage in a vertical position. Corrugated metal pipe shall be laid with the external laps of the circumferential seams toward the inlet end.

3.2 JOINTS FOR PIPE

- A. Joints for Pipe: The type of joint to be used shall be elastometric seals (gaskets) conforming to F477-93.
- B. General: The ends of the pipe shall be so formed that when the pipes are laid together and jointed, they shall make a continuous and uniform line of pipe with a smooth and regular surface.
- C. The CONTRACTOR shall furnish the ENGINEER complete information concerning the type and make of all joint material which he intends to use under the contract, including certification that the joint material meets the requirements of the specifications.

3.3 TESTING FOR LEAKAGE

- A. Normally storm sewer lines need not be tested, but if in the opinion of the ENGINEER, the workmanship or materials do not appear to be satisfactory, the ENGINEER may require that a section of the storm sewer line be tested.

3.4 CLEANING AND INSPECTION

- A. Cleaning: No pipe spalls, rocks, dirt, joint compounds, cement mortar and other trash or obstructions shall be left in a storm sewer pipe of any size or type.
- B. Inspection: Before lines become operational or final acceptance of the installation, larger size lines will be inspected.

END OF SECTION 33 4100