

**PROJECT
MANUAL**

NMERB New Office Building

Project Number: 21-0371.001

Volume 1 of 2

12/21/2022

Issued for Permit

**DEKKER
PERICH
SABATINI**

**Architecture
in Progress**

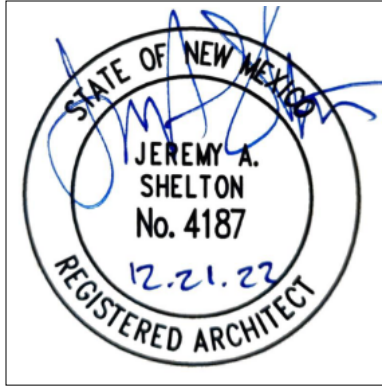
www.dpsdesign.org

NMERB New Office Building
Santa Fe, NM

DOCUMENT 00 0107 – SEALS PAGE

ARCHITECT

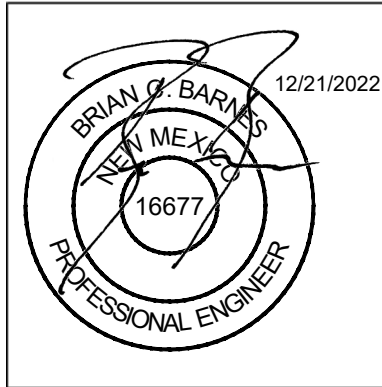
Responsible For Sections:



| | |
|-------------|---|
| Division 01 | All Sections |
| Division 03 | Section 03 3511 – Concrete Floor Finishes |
| Division 04 | Section 4 2000 – Unit Masonry |
| Division 05 | Section 05 5000 - Metal Fabrications Section 05 5133 – Metal Ladders |
| Division 06 | All Sections |
| Division 07 | All Sections |
| Division 08 | All Sections |
| Division 09 | All Sections |
| Division 10 | All Sections |
| Division 11 | All Sections |
| Division 12 | All Sections |
| Division 32 | All Sections unless noted otherwise |

STRUCTURAL

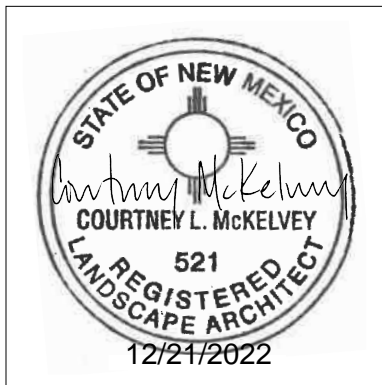
Responsible For Sections:



| | |
|-------------|---|
| Division 03 | All Sections unless noted otherwise |
| Division 05 | Section 05 1200 – Structural Steel Framing Section 05 2100 – Steel Joist Framing Section 05 3100 – Steel Decking Section 05 4000 – Cold-Formed Metal Framing |
| Division 06 | All Sections unless noted otherwise |

LANDSCAPE

Responsible For Sections:

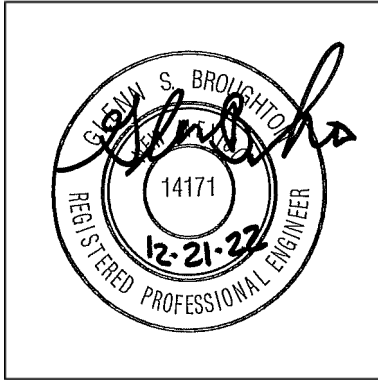


| | |
|-------------|---|
| Division 32 | Section 32 8423 – Irrigation System Section 32 9300 – Plants |
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CIVIL

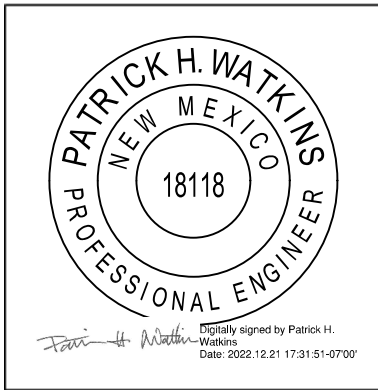
Responsible For Sections:



- Division 31 All sections unless noted otherwise
- Division 32 Section 32 1200 - Flexible Paving
Section 32 1300 - Concrete Pavement Curb Sidewalk
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PLUMBING & MECHANICAL

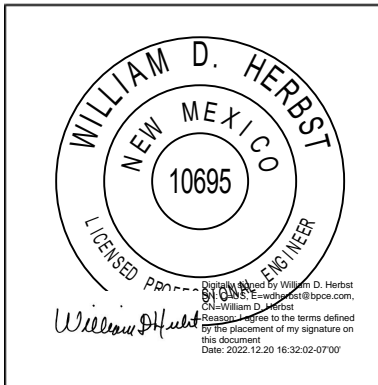
Responsible For Sections:



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- Division 22 All Sections
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Responsible For Sections:



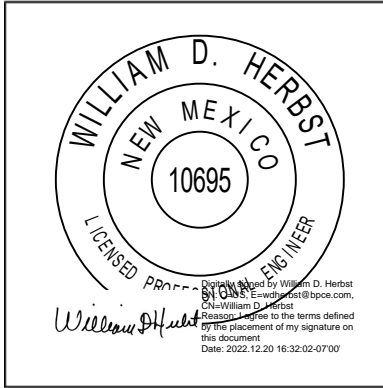
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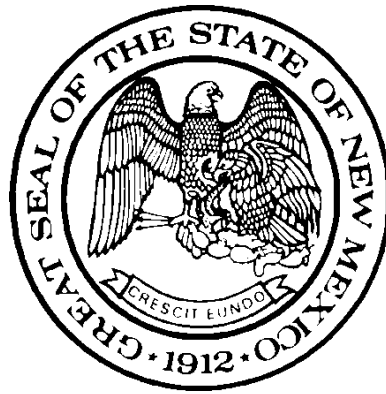
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END OF SECTION

**STATE PURCHASING DIVISION OF THE
GENERAL SERVICES DEPARTMENT
AND
NEW MEXICO EDUCATIONAL
RETIREMENT BOARD**



**REQUEST FOR PROPOSALS FOR
CONSTRUCTION**

RFP Number: 30-35200-23-00000

**New Mexico Educational Retirement Board Headquarters Building
located in Santa Fe, New Mexico**

RFP Release Date: June 8, 2023

PROPOSAL DUE DATE: July 13, 2023, 3:00 P.M. Mountain Time

IMPORTANT: For large proposals, ensure you allow yourself adequate time for a successful submission.

ELECTRONIC-ONLY PROPOSAL SUBMISSION

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I. INTRODUCTION

A. PURPOSE OF THIS REQUEST FOR PROPOSALS

The purpose of the Request for Proposals (RFP) is to solicit sealed proposals in order to establish a contract through competitive negotiations for the purchase of Construction Services based on the scope of work described below. All potential Offerors are to read, understand and accept the requirements of this RFP.

The New Mexico Educational Retirement Board (NMERB) has received funding to construct a new headquarters building in Santa Fe, New Mexico.

B. SCOPE OF PROCUREMENT:

The scope of work for this project includes the construction of a 19,443 square foot facility (the "Project") to serve as NMERB's headquarter building in Santa Fe. NMERB has purchased a 2.999-acre site at 5211 Las Soleras Drive in Santa Fe.

This building shall be designed in compliance with Section 15-3-36, Energy Efficiency Standards for Public Buildings, NMSA 1978 and qualify for the Environmental Protection Agency's ENERGY STAR®. The ENERGY STAR® special application graphic, which denotes on the final contract document drawings that the estimated energy use is intended to be in the top 25% as compared to U.S. building stock. Once the building is complete and operating for at least one year, it shall qualify to receive the ENERGY STAR® plaque in accordance with the rules and procedures of the ENERGY STAR® program. This will not be a LEED project. This procurement shall be under the Competitive Sealed Proposals for Construction and Facility Maintenance, Services and Repairs rule per New Mexico Administrative Code (NMAC) 1.4.8 and will result in one award.

This procurement will result in a contractual agreement between two parties; the procurement may ONLY be used by those two parties exclusively.

The RFP documents consist of all the documents listed in the Table of Contents and all said documents are incorporated in this RFP by reference. State Purchasing Division reserves the right to reject any or all proposals.

BACKGROUND INFORMATION:

The New Mexico Educational Retirement Board has nine members appointed to its Board of Trustees (the Board). The Board employs the Executive Director of the NMERB. The Educational Retirement Act (ERA) is the retirement system for the employees of the public schools, charter schools, colleges, universities and selected state agencies. The system was established in 1957 and operates under the authority of NM Statutes, Section 22-11-1 *et seq.*, NMSA 1978 as amended. The NMERB and its staff administer retirement benefits under the Act.

C. PROCUREMENT MANAGER

1. The General Services Department (GSD) has assigned a Procurement Manager who is responsible for the conduct of this procurement whose name, address, telephone number and e-mail address are listed below:

Educational Retirement Board Attn: Megan Mannila
Address: 701 Camino de los Marquez
Santa Fe, NM 87505 Phone: 505-476-6105
E-mail: Megan.Mannila@erb.nm.gov

2. **Any inquiries or requests** regarding this procurement should be submitted, in writing, to the Procurement Manager. Offerors may contact ONLY the Procurement Manager regarding this procurement. Other state employees or Evaluation Committee members do not have the authority to respond on behalf of the SPD.

D. PROPOSAL SUBMISSION

Submissions of all proposals must be accomplished via SPD's eProNM electronic procurement system. Refer to Section III.B.1 for instructions.

E. DEFINITION OF TERMINOLOGY

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

"Agency" means the Educational Retirement Board or General Services Department.

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

"Award" means the final execution of the contract document.

"Business Hours" means 8:00 AM thru 5:00 PM MST/MDT, whichever is in effect on the date given.

"Close of Business" or "EOB" means 5:00 PM Mountain Standard or Daylight Time, whichever is in use at that time.

"Confidential" means confidential financial information concerning Offeror's organization and data that qualifies as a trade secret in accordance with the Uniform Trade Secrets Act §§57-3-A-1 through 57-3A- 7, NMSA 1978,. See also NMAC 1.4.1.45. The following items may not be labelled as confidential: Offeror's submitted Cost response, Staff/Personnel Resumes/Bios (excluding personal information such as personal telephone numbers and/or home addresses), and other submitted data that is not confidential financial information or that qualifies under the Uniform Trade Secrets Act.

"Contract" An agreement between a state agency (the Owner) and a firm for the procurement of work covered by this RFP.

"Contract Documents" means any one or combination of the following contract documents: Contract/Agreement, conditions of the contract, this RFP and any addenda.

"Contractor" means any business having a contract with a state agency or a local public party.

"Determination" The written documentation of a decision made by the Evaluation Committee including findings of fact required to support a decision. A determination becomes part of the procurement file to which it pertains.

"Desirable" – The terms "may," "can," "should," "preferably," or "prefers" identify a desirable or discretionary item or factor.

"Electronic Submission" means a successful submittal of Offeror's proposal in the eProNM system, in such cases where eProNM submissions are accepted.

"Electronic Version/Copy" means a digital form consisting of text, images or both readable on computers or other electronic devices that includes all content that any Original and Hard Copy proposals contain. The digital form shall be submitted using a compact disc (CD) or USB flash drive. The electronic version/copy CANNOT be emailed.

"Evaluation Committee" means a body appointed to perform the evaluation of Offerors' proposals.

"Evaluation Committee Report" means a report prepared by the Procurement Manager and the Evaluation Committee to support the Committee's recommendation for contract award. It will contain scores and written evaluations of all responsive Offeror proposals.

"Final Award" means, in the context of this Request for Proposals and all its attendant documents, that point at which the final required signature on the contract(s) resulting from the procurement has been affixed to the contract(s) thus making it fully executed.

“Finalist” means an Offeror who meets all the mandatory specifications of the Request for Proposals and whose score on evaluation factors is sufficiently high to qualify that Offeror for further consideration by the Evaluation Committee.

“Firm” means the company or other business entity referenced under 1.4.8 NMAC for the purpose of identifying, individually or collectively: a general contractor, a prime contractor or a subcontractor, of any tier, whether basic trade subcontractor, subcontractor or other.

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

“Minor Irregularities” means anything in the proposal that does not affect the price, quality and/or quantity, or any other mandatory requirement.

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

“Owner” as defined in the Agreement Between Owner and Contractor shall be the Facilities Management Division of the New Mexico General Services Department

“Owner’s Team” is comprised of Facilities Management Division and others in the General Services Department, a Project Manager, agency staff, and the Owner’s consultant.

“Prime Contractor” means the New Mexico licensed contractor selected for this project by the Evaluation Committee.

“Project Team” All members of the firm and team, including subcontractors who will be responsible for the completion of the project.

“Procurement Manager” means any person or designee authorized by a state agency or local public body to enter into or administer contracts and make written determinations with respect thereto.

“Procuring Agency” means all State of New Mexico agencies, commissions, institutions, political subdivisions and local public bodies allowed by law to entertain procurements.

“Project” means a temporary process undertaken to solve a well-defined goal or objective with clearly defined start and end times, a set of clearly defined tasks, and a budget.

“Redacted” means a version/copy of the Offeror’s proposal with the information considered proprietary or confidential (as defined by §§57-3A-1 to 57-3A-7, NMSA 1978 and NMAC 1.4.1.45 and summarized herein and outlined in Section II.C.8 of this RFP) blacked-out BUT NOT omitted or removed.

“Request for Proposals” or “RFP” means all documents, including those attached or incorporated by reference, and any amendments issued for use in soliciting proposals, for this project.

“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, or items of tangible personal property described in the proposal.

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

“**Sealed**” means, in terms of a non-electronic submission, that the proposal is enclosed in a package which is completely fastened in such a way that nothing can be added or removed. Open packages submitted will not be accepted except for packages that may have been damaged by the delivery service itself. The State reserves the right, however, to accept or reject packages where there may have been damage done by the delivery service itself. Whether a package has been damaged by the delivery service or left unfastened and should or should not be accepted is a determination to be made by the Procurement Manager. By submitting a proposal, the Offeror agrees to and concurs with this process and accepts the determination of the Procurement Manager in such cases.

“**SPD**” means State Purchasing Division of the New Mexico State General Services Department.

“**Staff**” means any individual who is a full-time, part-time, or an independently contracted employee with the Offerors’ company.

“**State (the State)**” means the State of New Mexico.

“**State Agency**” means any department, commission, council, board, committee, institution, legislative body, agency, government corporation, educational institution or official of the executive, legislative or judicial branch of the government of this state. “State agency” includes the Purchasing Division of the General Services Department and the State Purchasing Agent but does not include local public bodies.

“**State Purchasing Agent**” means the Director of the Purchasing Division of the General Services Department.

“**Statement of Concurrence**” means an affirmative statement from the Offeror to the required specification agreeing to comply and concur with the stated requirement(s). This statement shall be included in Offerors proposal. (E.g. “We concur,” “Understands and Complies,” “Comply,” “Will Comply if Applicable,” etc.)

“**Unredacted**” means a version/copy of the proposal containing all complete information; including any that the Offeror would otherwise consider confidential, such copy for use only for the purposes of evaluation.

“**Written**” means typewritten on standard 8 ½ x 11-inch paper. Larger paper is permissible for charts, spreadsheets, etc.

F. PROCUREMENT LIBRARY

A procurement library has been established. Offerors are encouraged to review the material contained in the Procurement Library by selecting the link provided in the electronic version of this document through your own internet connection or by contacting the Procurement Manager and scheduling an appointment. The library contains information listed below:

Electronic version of RFP, Questions & Answers, RFP Amendments, etc.
<https://www.generalservices.state.nm.us/statepurchasing/active-procurements.aspx>

G. BIDDING DOCUMENTS

Bidding documents, plans, specifications, drawings etc. may be obtained at from Academy Reprographics upon payment of a deposit in the amount of two hundred dollars (\$200) made payable to the State of New Mexico for each complete set. Partial sets or individual sheets will not be issued. The successful Bidder will receive refund of his deposit, and any unsuccessful Bidder who returns the Bidding Documents in good and complete condition within sixty (60) days of the Bid Opening will also receive refund of this deposit. No deposits will be returned after the sixty-day period.

Bidding Documents may be obtained / reviewed at the following locations:

Academy Reprographics
8900 San Mateo Blvd NE suite N
Albuquerque, NM 87113 (505)821-
6666

Construction Reporter
www.constructionreporter.com
Dodge Plan room
<http://bitly.ws/9BDG>

II. CONDITIONS GOVERNING THE PROCUREMENT

This section of the RFP contains the schedule of events, the descriptions of each event, and the conditions governing this procurement.

A. SEQUENCE OF EVENTS

The Procurement Manager will make every effort to adhere to the following schedule. However, if the Selection Committee makes a selection at the proposal Short Listing, then Selection of Finalist and Oral Presentations will not apply. The notional schedule for the procurement is as follows:

| | Event | Responsible Party | Date | Location |
|-----|--|------------------------------------|---|---|
| 1. | Issue RFP | State Purchasing Division (SPD) | June 8, 2023 | https://www.generalservices.state.nm.us/statepurchasing/active-procurements.aspx |
| 2. | Pre-proposal Meeting- MANDATORY Site Visit | SPD and Procurement Manager | Wednesday, June 14, 2023 10:00 am June 14, 2023 11:30 pm | In-person at: 33 Plaza La Prensa Santa Fe, NM 87507 5211 Las Soleras Drive, Santa Fe, NM |
| 3. | Deadline to Submit Written Questions | Potential Offerors | June 22, 2023 EOB | Email to Procurement Manager Megan Mannila, megan.mannila@erb.nm.gov |
| 4. | Response to Written Questions- last RFP Addenda/Amendment issued | Procurement Manager | June 29, 2023 EOB | https://www.generalservices.state.nm.us/statepurchasing/active-procurements.aspx |
| 5. | Submission of Proposal | Potential Offerors | July 13, 2023 3 PM current Mountain time | See #5 in Section B below |
| 6. | *Proposal Evaluation | Selection Committee | July 14, 2023 to July 19, 2023 | |
| 7. | *Selection of Finalists | Selection Committee | July 20, 2023 | |
| 8. | *Oral Presentations | Selection Committee | To Be Determined | |
| 9. | *Contract Award | SPD/NMERB | July 31, 2023 | |
| 10. | Protest Deadline | SPD | Contract Award + 15 days | |

*Dates indicated with an asterisk are estimates only and may be subject to change without necessitating an amendment to the RFP.

B. EXPLANATION OF EVENTS

The following paragraphs describe the activities listed in the Sequence of Events shown in Section II.A., above.

- 1. Issue RFP** - This RFP is issued on behalf of the State of New Mexico by the State Purchasing Division (SPD) of the General Services Department.
- 2. Mandatory Pre-proposal Conference** – the Mandatory pre-proposal meeting provides Offerors an opportunity to request clarification about the procurement process and discuss the intent of the contract. A representative from each interested prime contractor must attend the conference. Subcontractors and suppliers are invited to attend this meeting as well.

Potential Offeror(s) are encouraged to submit written questions in advance of the conference to the Procurement Manager. The identity of the organization submitting the question(s) will not be revealed. Additional written questions may be submitted at the conference. All questions answered during the Pre-Proposal Conference will be considered **unofficial** until they are posted in writing. All written questions will be addressed in writing.

A public log will be kept of the names of potential Offeror(s) that attended the pre-proposal conference and will be issued via addendum (RFP Amendment).

RFP 30-35200-23-00000 Pre-proposal Mandatory Conference

Mandatory Pre-proposal meeting

June 14, 2023 at 10:00 AM - 11:00 AM (current Mountain Time)

Public Employees Retirement Association

Santa Fe Office

Seminar Room

33 Plaza La Prensa

Santa Fe, NM 87507

Optional Site visit is ENCOURAGED- it will be held on the date/time indicated in schedule table.

- 3. Deadline to Submit Written Questions** – Potential Offerors may submit written questions to the Procurement Manager as to the intent or clarity of this RFP until the deadline as indicated in Section II.A, Sequence of Events. All written questions must be addressed to the Procurement Manager. Questions shall be clearly labeled and shall cite the Section(s) in the RFP or other document which form the basis of the question.
- 4. Response to Written Questions-** last RFP Addenda/Amendment issued - If an Addendum/Amendment is deemed necessary to clarify the contract scope, it will be issued no later than three (3) working days prior to the submission deadline. Any Addenda/Amendment issued prior to the submittal deadline shall become part of the Request for Proposals and any information required shall be included in your proposal. SPD will post the addenda/amendment or notice to their website.
- 5. Submission of Proposal** –

IMPORTANT: For large proposals, ensure you allow yourself adequate time for a successful proposal submission.

At this time, only electronic proposal submission is allowed. Do not submit hard copies until further notice.

ALL PROPOSALS MUST BE RECEIVED BY THE PROCUREMENT MANAGER OR DESIGNEE NO LATER THAN **3:00 PM MST/MDT ON July 13, 2023**. NO LATE PROPOSAL CAN BE ACCEPTED. The date and time of receipt will be recorded on each proposal. Proposals will be time-stamped in the system when the Offeror clicks “OK” after “Review and Submit.” Such electronic submissions will be considered sealed in accordance with statute.

It is the Offeror’s responsibility to ensure all documents are completely uploaded and submitted electronically via the eProNM system by the deadline set forth in this RFP. The eProNM system will automatically cease uploading data at the date and time of the deadline. Please ensure that you, as the Offeror, allow adequate time for large uploads and to fully complete your submittal by the deadline. A submission that is not both: (1) fully complete; and (2) received, via the eProNM system by the deadline, will be deemed late. Further, a submission that is not fully complete and received via the eProNM system by the deadline because the response was captured, blocked,

filtered, quarantined or otherwise prevented from reaching the proper destination server by any anti-virus or other security software will be deemed late. In accordance with statute and rule, NO LATE PROPOSAL CAN BE ACCEPTED.

Proposals must be submitted electronically through SPD's eProNM electronic procurement system. Refer to Section III.B.1 for instructions. Proposals submitted by facsimile, or other electronic means other than through the SPD electronic e-procurement system, will not be accepted.

A log will be kept of the names of all Offeror organizations that submitted proposals. Pursuant to §13-1-116 NMSA 1978, the contents of proposals shall not be disclosed to competing potential Offerors during the negotiation process. The negotiation process is deemed to be in effect until the contract is awarded pursuant to this Request for Proposals. Awarded in this context means the final required state agency signature on the contract(s) resulting from the procurement has been obtained

Confidentiality of Proposals: Proposals will not be opened publicly and shall not be open to public inspection until after an Offeror has been awarded the contract. An Offeror may request in writing non-disclosure of confidential data. Such data shall accompany the proposal and shall be readily separable from the proposal in order to facilitate eventual public inspections of the non-confidential portion of the proposal.

- 6. Proposal Evaluation** - An Evaluation Committee will perform the evaluation of proposals. This process will take place as indicated in Section II.A, Sequence of Events, depending upon the number of proposals received. During this time, the Procurement Manager may initiate discussions with Offerors who submit responsive or potentially responsive proposals for the purpose of clarifying aspects of the proposals. However, proposals may be accepted and evaluated without such discussion. Discussions SHALL NOT be initiated by the Offerors.
- 7. Selection of Finalists** - The Evaluation Committee will select, and the Procurement Manager will notify the finalist Offerors as per schedule Section II.A, Sequence of Events or as soon as possible thereafter. The Evaluation Committee will review each proposal. The technical proposal evaluation factors will be scored first and independently of the price proposal evaluation. Points will be allocated per Section V of this RFP, by each committee member. Then the price scoring will occur and be added to the totals. The committee member rankings will be totaled to determine the overall ranking of the firms. If deemed appropriate, the Evaluation Committee may hold interviews with the highest-ranked Offerors who will be deemed Finalists. Generally, only two or three will be selected as finalists depending on the total of scores. It is at the discretion of the committee as to how many will be selected to be finalists or if there is a clear choice of an awardee based on points. A schedule for Oral Presentation, if any, will be determined at this time. If fewer than two proposals are received, the Evaluation Committee may recommend award or may reissue the RFP. The Committee shall determine the rankings without the possibility of a tie.
- 8. Oral Presentations** - Finalist Offerors may be required to conduct an oral presentation at a venue to be determined as per Sequence of Events or as soon as possible. If oral presentations are held, Finalist Offerors may be required to make their presentations through electronic means (via Teams) if a physical meeting is not allowed. The Agency will provide Finalist Offerors with applicable details on the questions and place of the presentations. Whether or not oral presentations will be held is at the discretion of the Evaluation Committee and SPD.
- 9. Finalize Contractual Agreements** – After approval of the Evaluation Committee Report, any contractual agreement(s) resulting from this RFP will be finalized with the most advantageous Offeror(s), taking into consideration the evaluation factors set forth in this RFP, as per Section II.A., Sequence of Events, or as soon as possible thereafter. The most advantageous proposal may or may not have received the most points. In the event mutually agreeable terms cannot be reached with the apparent most advantageous Offeror in the timeframe specified, the State reserves the right to finalize

a contractual agreement with the next most advantageous Offeror(s) without undertaking a new procurement process. A Notice of Intent to Award will be issued.

10. **Contract Award** – Upon receipt of the signed contractual agreement from the Offeror, the Agency Procurement office will award as per Section II.A., Sequence of Events, or as soon as possible thereafter. The award is subject to appropriate Department and State approval and signatures.
11. **Protest Deadline** - Any protest by an Offeror must be timely and in conformance with NMSA 1978, § 13-1-172 and applicable procurement regulations. As a Protest Manager has been named in this Request for Proposals, pursuant to NMSA 1978, § 13-1-172, ONLY protests delivered directly to the Protest Manager in writing and in a timely fashion will be considered to have been submitted properly and in accordance with statute, rule and this Request for Proposals. The 15-calendar day protest period shall begin on the day following the award of contract and will end at 5:00 pm Mountain Standard Time/Daylight Time on the 15th day. Protests must be written and must include the name and address of the protestor and the request for proposal number. It must also contain a statement of the grounds for protest including appropriate supporting exhibits and it must specify the ruling requested from the party listed below. The protest must be delivered to:

Dorothy Mendonca, State Purchasing Agent
State Purchasing Division 1100 S. St. Francis Drive Room 2016
Santa Fe, NM 87505

PROTESTS RECEIVED AFTER THE DEADLINE WILL NOT BE ACCEPTED.

C. GENERAL REQUIREMENTS

1. Acceptance of Conditions Governing the Procurement

Potential Offerors must indicate their acceptance of these Conditions Governing the Procurement, Section II.C, by completing and signing the Letter of Transmittal form, pursuant to the requirements in Section II.C.30, located in APPENDIX H.

2. Incurring Cost

Any cost incurred by the potential Offeror in preparation, transmittal, and/or presentation of any proposal or material submitted in response to this RFP shall be borne solely by the Offeror. Any cost incurred by the Offeror for set up and demonstration of the proposed equipment and/or system shall be borne solely by the Offeror.

3. Prime Contractor Responsibility

Any Contractual agreement that may result from this RFP shall specify that the prime Contractor is solely responsible for fulfillment of all requirements of the Contractual agreement with a State agency which may derive from this RFP. The State Agency entering into a Contractual agreement with a vendor will make payments to only the prime Contractor.

4. Subcontractors

The use of subcontractors is allowed. The prime Contractor shall be wholly responsible for the entire performance of the Contractual agreement whether or not subcontractors are used. Additionally, the prime Contractor must receive approval, in writing, from the agency awarding any resultant Contract, before any subcontractor is used during the term of this agreement.

5. Subcontractor Listing Form

A Subcontractor Listing Form is required as part of the Price Proposal. Subcontractor development and management will be evaluated. Each Offeror shall complete the Subcontractor Listing Form found as Appendix B. The Offeror may not change any of the firms listed for this project after submission of the proposal without the Owner's consent. The Owner will consider any request for a change in the listed firms ONLY in conformance with the New Mexico "Subcontractors Fair Practices Act" (NMSA 1978, §

13-4-31 through 13-4-43.

6. Amended Proposals

An Offeror may submit an amended proposal before the deadline for receipt of proposals. Such amended proposals must be complete replacements for a previously submitted proposal and must be clearly identified as such in the transmittal letter. **The Agency personnel will not merge, collate, or assemble proposal materials.**

7. Offeror's Rights to Withdraw Proposal

Offerors will be allowed to withdraw their proposals at any time prior to the deadline for receipt of proposals. The Offeror must submit a written withdrawal request addressed to the Procurement Manager and signed by the Offeror's duly authorized representative.

The approval or denial of withdrawal requests received after the deadline for receipt of the proposals is governed by the applicable procurement regulations, 1.4.1.5 & 1.4.1.36 NMAC.

8. Proposal Offer Firm

Responses to this RFP, including proposal prices for services, will be considered firm for one hundred eighty (180) days after the due date for receipt of proposals or one hundred fifty (150) days after the due date for the receipt of a best and final offer, if the Offeror is invited or required to submit one.

9. Disclosure of Proposal Contents

The contents of all submitted proposals will be kept confidential until the final award has been completed by the Agency. At that time, all proposals and documents pertaining to the proposals will be available for public inspection, *except* for proprietary or confidential material as follows:

a. ***Proprietary and Confidential information is restricted to:***

1. confidential financial information concerning the Offeror's organization; and
2. information that qualifies as a trade secret in accordance with the Uniform Trade Secrets Act, §§57-3A-1 through 57-3A-7, NMSA 1978.

- b. an additional but separate redacted version of Offeror's proposal, as outlined and identified in Sections III.B.1.a.i and III.B.2.a.i, shall be submitted containing the blacked-out proprietary or confidential information, in order to facilitate eventual public inspection of the non-confidential version of Offeror's proposal.

IMPORTANT: The price of products offered, or the cost of services proposed **SHALL NOT** be designated as proprietary or confidential information.

If a request is received for disclosure of proprietary or confidential materials, the Agency shall examine the request and make a written determination that specifies which portions of the proposal should be disclosed. Unless the Offeror takes legal action to prevent the disclosure, the proposal will be so disclosed. The proposal shall be open to public inspection subject to any continuing prohibition on the disclosure of proprietary or confidential information.

10. No Obligation

This RFP in no manner obligates the State of New Mexico or any of its Agencies to the use of any Offeror's services until a valid written Contract is awarded and approved by appropriate authorities.

11. Termination

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

12. Sufficient Appropriation

Any contract awarded as a result of this RFP process may be terminated if sufficient appropriations

or authorizations do not exist. Such terminations will be affected by sending written notice to the contractor. The Agency's decision as to whether sufficient appropriations and authorizations are available will be accepted by the contractor as final.

13. Legal Review

The Agency requires that all Offerors agree to be bound by the General Requirements contained in this RFP. Any Offeror's concerns must be promptly submitted in writing to the attention of the Procurement Manager.

14. Governing Law

This RFP and any agreement with an Offeror which may result from this procurement shall be governed by the laws of the State of New Mexico.

15. Basis for Proposal

Only information supplied, in writing, by the Agency through the Procurement Manager or in this RFP should be used as the basis for the preparation of Offeror proposals.

16. Contract Terms and Conditions

The Contract between an Agency and a Contractor will follow the format specified by the Agency and contain the terms and conditions set forth in the **Sample Contract (APPENDIX J)**. However, the Contracting agency reserves the right to negotiate provisions in addition to those contained in this RFP Sample Contract with any Offeror. The contents of this RFP, as revised and/or supplemented, and the successful Offeror's proposal will be incorporated into and become part of any resultant Contract.

The Agency discourages exceptions from the Contract terms and conditions as set forth in the RFP Sample Contract. Such exceptions may cause a proposal to be rejected as nonresponsive when, in the sole judgment of the Agency, the proposal appears to be conditioned on the exception, or correction of what is deemed to be a deficiency, or an unacceptable exception is proposed which would require a substantial proposal rewrite to correct.

Should an Offeror object to any of the terms and conditions as set forth in the RFP Sample Contract strongly enough to propose alternate terms and conditions in spite of the above, the Offeror must propose **specific** alternative language (APPENDIX K). The Agency may or may not accept the alternative language. General references to the Offeror's terms and conditions or attempts at complete substitutions of the Draft Contract are not acceptable to the Agency and will result in disqualification of the Offeror's proposal.

Offerors must provide a brief discussion of the purpose and impact, if any, of each proposed change followed by the specific proposed alternate wording.

If an Offeror fails to propose any alternate terms and conditions during the procurement process (the RFP process prior to selection as successful Offeror), no proposed alternate terms and conditions will be considered later during the negotiation process. Failure to propose alternate terms and conditions during the procurement process (the RFP process prior to selection as successful Offeror) is an **explicit agreement** by the Offeror that the contractual terms and conditions contained herein are **accepted** by the Offeror.

17. Offeror's Terms and Conditions:

Offerors must submit with the proposal a complete set of any additional terms and conditions they expect to have included in a Contract negotiated with the Agency (APPENDIX K).

18. Contract Deviations:

Any additional terms and conditions, which may be the subject of negotiation (such terms and

conditions having been proposed during the procurement process, that is, the RFP process prior to selection as successful Offeror), will be discussed only between the Agency and the Offeror selected and shall not be deemed an opportunity to amend the Offeror's proposal.

19. Offeror Qualifications

The Evaluation Committee may make such investigations as necessary to determine the ability of the potential Offeror to adhere to the requirements specified within this RFP. The Evaluation Committee will reject the proposal of any potential 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.

20. Right to Waive Minor Irregularities

The Evaluation Committee reserves the right to waive minor irregularities that do not materially affect the price, quality and/or quantity or any other mandatory requirement. The Evaluation 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 Evaluation Committee.

21. Change in Contractor Representatives

The Agency reserves the right to require a change in Contractor representatives if the assigned representative(s) is (are) not, in the opinion of the Agency, adequately meeting the needs of the Agency.

22. Notice of Penalties

The Procurement Code, Sections 13-1-28 through 13-1-199 NMSA 1978, imposes civil, misdemeanor and felony criminal penalties for its violation. In addition, the New Mexico criminal statutes impose felony penalties for bribes, gratuities and kickbacks.

23. Agency Rights

The Agency in agreement with the Evaluation Committee reserves the right to accept all or a portion of a potential Offeror's proposal.

24. Right to Publish

Throughout the duration of this procurement process and Contract term, Offerors and Contractors must secure from the agency written approval prior to the release of any information that pertains to the potential work or activities covered by this procurement and/or agency Contracts deriving from this procurement. Failure to adhere to this requirement may result in disqualification of the Offeror's proposal or removal from the Contract.

25. Ownership of Proposals

All documents submitted in response to the RFP shall become property of the State of New Mexico.

26. Confidentiality

Any confidential information provided to, or developed by, the Contractor in the performance of the Contract resulting from this RFP shall be kept confidential and shall not be made available to any individual or organization by the Contractor without the prior written approval of the Agency.

The Contractor(s) agrees to protect the confidentiality of all confidential information and not to publish or disclose such information to any third party without the procuring Agency's written permission.

27. Electronic mail address required

A large part of the communication regarding this procurement will be conducted by electronic mail (e-mail). Offeror must have a valid e-mail address to receive this correspondence.

28. Use of Electronic Versions of this RFP

This RFP is being made available by electronic means. In the event of conflict between a version of the RFP in the Offeror's possession and the version maintained by the agency, the Offeror acknowledges that the version maintained by the agency shall govern. Please refer to: <https://www.generalservices.state.nm.us/statepurchasing/active-procurements.aspx>

29. New Mexico Employees Health Coverage

Contractor shall comply with all federal and state laws and regulations regarding the obligation of employers to provide health insurance for employees. If the Contractor has more than fifty (50) full-time-equivalent employees, the Affordable Care Act applies. If the Contractor has between two (2) and fifty (50) full-time-equivalent employees, the Contractor shall notify the employees of the availability of health insurance through beWellNM online at <http://www.beWellnm.com>.

Concurrence with this NM Health Coverage requirement must be submitted using the form (APPENDIX G).

30. Disclosure Regarding Responsibility

- A. Any prospective Contractor and any of its Principals who enter into a contract greater than sixty thousand dollars (\$60,000.00) with any state agency or local public body for professional services, tangible personal property, services or construction agrees to disclose whether the Contractor, or any principal of the Contractor's company:
1. is presently debarred, suspended, proposed for debarment, or declared ineligible for award of contract by any federal entity, state agency or local public body;
 2. has within a three-year period preceding this offer, been convicted in a criminal matter or had a civil judgment rendered against them for:
 - a. the commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state or local) contract or subcontract;
 - b. violation of Federal or state antitrust statutes related to the submission of offers; or
 - c. the commission in any federal or state jurisdiction of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, violation of Federal criminal tax law, or receiving stolen property;
 3. is presently indicted for, or otherwise criminally or civilly charged by any (federal state or local) government entity with the commission of any of the offenses enumerated in paragraph A of this disclosure;
 4. has, preceding this offer, been notified of any delinquent Federal or state taxes in an amount that exceeds \$3,000.00 of which the liability remains unsatisfied. Taxes are considered delinquent if the following criteria apply.
 - a. The tax liability is finally determined. The liability is finally determined if it has been assessed. A liability is not finally determined if there is a pending administrative or judicial challenge. In the case of a judicial challenge of the liability, the liability is not finally determined until all judicial appeal rights have been exhausted.
 - b. The taxpayer is delinquent in making payment. A taxpayer is delinquent if the taxpayer has failed to pay the tax liability when full payment was due and required. A taxpayer is not delinquent in cases where enforced collection action is precluded.
 - c. Have within a three-year period preceding this offer, had one or more contracts terminated for default by any federal or state agency or local public body.)
- B. Principal, for the purpose of this disclosure, means an officer, director, owner, partner, or a person having primary management or supervisory responsibilities within a business entity or related entities.

- C. The Contractor shall provide immediate written notice to the State Purchasing Agent or other party to this Agreement if, at any time during the term of this Agreement, the Contractor learns that the Contractor's disclosure was at any time erroneous or became erroneous by reason of changed circumstances.
- D. A disclosure that any of the items in this requirement exist will not necessarily result in termination of this Agreement. However, the disclosure will be considered in the determination of the Contractor's responsibility and ability to perform under this Agreement. Failure of the Contractor to furnish a disclosure or provide additional information as requested will render the Offeror nonresponsive.
- E. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the disclosure required by this document. The knowledge and information of a Contractor is not required to exceed that which is the normally possessed by a prudent person in the ordinary course of business dealings.
- F. The disclosure requirement provided is a material representation of fact upon which reliance was placed when making an award and is a continuing material representation of the facts during the term of this Agreement. If during the performance of the contract, the Contractor is indicted for or otherwise criminally or civilly charged by any government entity (federal, state or local) with commission of any offenses named in this document the Contractor must provide immediate written notice to the State Purchasing Agent or other party to this Agreement. If it is later determined that the Contractor knowingly rendered an erroneous disclosure, in addition to other remedies available to the Government, the State Purchasing Agent or Central Purchasing Officer may terminate the involved contract for cause. Still further the State Purchasing Agent or Central Purchasing Officer may suspend or debar the Contractor from eligibility for future solicitations until such time as the matter is resolved to the satisfaction of the State Purchasing Agent or Central Purchasing Officer.

31. Letter of Transmittal

Offeror's proposal must be accompanied by a Letter of Transmittal Form (APPENDIX E), which must be signed by the individual authorized to contractually obligate the company, identified in #2 below.

Provide the following information:

1. Identify the submitting business entity; Name, Mailing Address, Phone Number, Federal Tax ID Number (TIN), and New Mexico Business Tax ID Number (BTIN, formerly CRS);
2. Identify the Name, Title, Telephone, and E-mail address of the person authorized by the Offeror's organization to (A) contractually obligate the business entity providing the Offer, (B) negotiate a contract on behalf of the organization; and/or (C) provide clarifications or answer questions regarding the Offeror's proposal content (A response to B and/or C is only necessary if the responses differs from the individual identified in A);
3. Identify any subcontractor/s that may be utilized in the performance of any resultant contract award;
4. Identify any other entity/-ies (such as State Agency, reseller, etc., that is not a sub-contractor identified in #3) that may be used in the performance of this awarded contract; and
5. The individual identified in #2 above, must sign and date the form, attesting to the veracity of the information provided, and acknowledging (a) the organization's acceptance of the Conditions Governing the Procurement stated in Section II.C.1, (b) the organizations acceptance of the Section V. Evaluation Factors, and (c) receipt of any and all amendments to the RFP.

Failure to submit a signed Letter of Transmittal Form (Appendix E) will result in Offeror's disqualification.

32. New Mexico/Native American Resident Preferences

To ensure adequate consideration and application of §13-1-21 NMSA 1978 (as amended), Offeror must submit a copy of its valid New Mexico/Native American Resident Preference Certificate or its valid New Mexico/Native American Resident Veteran Preference with its proposal. Certificates for preferences must be obtained through the New Mexico Department of Taxation & Revenue <http://www.tax.newmexico.gov/Businesses/in-state-veteran-preference-certification.aspx>.

In accordance with §13-1-21(H) NMSA 1978, an agency shall not award any combination of New Mexico/Native American Resident Preferences.

III. RESPONSE FORMAT AND ORGANIZATION

A. NUMBER OF RESPONSES

Offerors shall submit only one proposal in response to this RFP.

B. NUMBER OF COPIES

1. ELECTRONIC SUBMISSION RESPONSES (SPD'S E-PROCUREMENT SYSTEM EPRONM)

Proposals in response to this RFP must be submitted through State Purchasing's electronic procurement system. In the eProNM system, the Offeror need only submit one single electronic copy of each portion of its proposal (Technical and Cost) as outlined below. **EXCEPTION: Single electronic files that exceed 50mb may be submitted as multiple uploads, which must be the least number of uploads necessary to fall under the 50mb limit.** Separate the proposals as described below into separate electronic files for submission.

EProNM proposals must be submitted in the manner outlined below. Technical and Cost portions of Offerors proposal **must** be submitted in separate uploads as indicated below in this section, and **must** be prominently identified as "Technical Proposal," or "Business/Price Proposal," on the front page of each upload

- a) **Technical Proposals** – One (1) ELECTRONIC upload must be organized in accordance with **Section III.C.1. Proposal Format**. All information for the Technical Proposal **must be combined into a single file/document for uploading.** **EXCEPTION: Single electronic files that exceed 50mb may be submitted as multiple uploads, which must be the least number of uploads necessary to fall under the 50mb limit.**

The Technical Proposals **SHALL NOT** contain any cost information.

- i. **Confidential Information:** If Offeror's proposal contains confidential information, as defined in Section I.F.6 and detailed in Section II.C.8, Offeror **must** submit **two (2) separate ELECTRONIC technical files** :

- One (1) ELECTRONIC version of the requisite proposals identified in Section III.B.2.a above as **unredacted** (def. Section I.F.38) versions for evaluation purposes; and
- One (1) **redacted** (def. Section I.F.27) ELECTRONIC. for the public file, in order to facilitate eventual public inspection of the non-confidential version of Offeror's proposal. Redacted versions **must** be clearly marked as "REDACTED" or "CONFIDENTIAL" on the first page of the electronic file;

- b) **Business/Price Proposals** – One (1) ELECTRONIC upload of the proposal containing **ONLY** the Price Proposal and other Business information. All information for the Business/cost proposal **must be combined into a single file/document for uploading.** *EXCEPTION: Single electronic files that exceed 50mb may be submitted as multiple uploads, which must be the least number of uploads necessary to fall under the 50mb limit*
- c) Complete proposal upload prior to submission deadline - It is the Offeror's responsibility to ensure all documents are completely uploaded and submitted electronically via the eProNM system by the deadline set forth in this RFP. The eProNM system will automatically cease uploading data at the date and time of the deadline. Please ensure that you, as the Offeror, allow adequate time for large uploads and to fully complete your submittal by the deadline. A submission that is not both: (1) fully complete; and (2) received, via the eProNM system by the deadline, will be deemed late. Further, a submission that is not fully complete and received via the eProNM system by the deadline because the response was captured, blocked, filtered, quarantined or otherwise prevented from reaching the proper destination server by any anti-virus or other security software will be deemed late. In accordance with statute and rule, **NO LATE OFFER CAN BE ACCEPTED.**
- d) Upload a single Technical file and a single Cost file, unless a document exceeds 50MB - The Offeror need only submit one single electronic copy of each portion of its proposal (one Technical and one Cost), as outlined in Sections III.B.2 and III.B.3. *EXCEPTION: Single electronic files that exceed 50MB may be submitted as multiple uploads, which must be the least number of uploads necessary to fall under the 50mb limit.*
- e) **DO NOT** upload .zip files - In accordance with the State of New Mexico's Information Technology (IT) policies and procedures, we are unable to accept .zip files. See Section II.B.1.d, above, requirements for uploading large files.
- f) **DO NOT** password-protect proposal documents – The SPD eProNM system is secure, and accessible only to SPD personnel, through a password-protected login. Confidential information must adhere to the requirements of Section II.C.8 and must be submitted pursuant to Section II.B.2.a.
- g) eProNM Technical Support
 - i. For assistance with completing the registration process, uploading a proposal, or other technical support issues, call (505) 795-1894 or (505) 795-1076
 - ii. For assistance with eProNM passwords or if the primary contact for your account is no longer employed by your organization call (800) 233-1211 or GSD.SPDePRocurement@state.nm.us

The ELECTRONIC proposal submission must be fully uploaded in SPD's eProNM system by the submission deadline in Section II.B.6.

For last minute help in uploading call 505-795-1894 or 800-233-1121 and ask for Theresa Mendibles who can assist. Document and make note of who you talk to.

Electronic Submission Hints: Press "save progress" twice in order to save as you go during your uploading. Do not wait until the last minute to upload- give yourself plenty of time due to the time needed to upload larger files.

Any proposal that does not adhere to the requirements of this Section and **Section III.C.** may be deemed non-responsive and rejected on that basis.

C. PROPOSAL FORMAT FOR EACH VOLUME

1. VOLUME I: TECHNICAL PROPOSAL FORMAT

All proposals must be submitted as follows:

Length of the proposal **for the Response to Technical Specifications** shall be limited. See the limit requirement for each item below. The text shall be no smaller than 10 point, and/or graphics. Generally, the

resumes, Qualifications Statements, Attachments, Appendices, supplied References and Health/Safety Plans are excluded from the page count limits.

DO NOT INCLUDE ANY COST INFORMATION IN THE TECHNICAL PROPOSAL.

Within each section of the proposal, Offerors should address the items in the order in which they appear in this RFP. All forms provided in this RFP should be thoroughly completed and included in the appropriate section of the proposal.

Proposal Organization - All pages shall be numbered. Tab the binders. On the electronic, each section should be bookmarked for easy navigation. Proposals shall be organized and **tabbed or bookmarked** as described below:

TABLE OF CONTENTS

Bookmark 1 – PAST PERFORMANCE- 2 pages maximum

- **Section 1a** - Requested information- on separate pieces of paper
- **Section 1b - Attachment A** - these pages will not count in the page count
- **Section 1c - Attachment E** for listing current projects- this page will not count in the page count

Bookmark 2.1 – STAFFING – GENERAL CONTRACTOR- 3 pages maximum

1. **Section 2a** - Requested information- on separate pieces of paper
2. **Section 2b - Attachment C** - resumes- these pages will not count in the page count limit -one page per resume.
3. **Section 2c - Attachment D** - Organizational Chart(s)- these pages do not count in the page count
4. **Section 2d - Appendix A Part 1** - General Contractor Statement of Qualifications Form- Each Offeror shall complete the Statement of Qualifications form for themselves and include this form in their proposal. These pages do not count in the page count. There will be NO Subcontractor qualifications form required.
5. **Section 2e - Attachments M & N** - (optional) – Clarifications and Explanations: Additional Information- these pages do not count in the page count.

Bookmark 3 – MANAGEMENT PLAN- 5 pages maximum Attachment L - Management Plan

Bookmark 4 – HEALTH AND SAFETY- 3 pages maximum

1. **Section 4a** - Requested information- on separate pages
2. **Section 4b - Attachment H**
 - a. Submit a valid insurance ACORD form which lists the insurance types and levels as required in the RFP.
 - b. Submit a letter from the Workman’s Comp insurance carrier as to the EMR (Experience Modification Rate) for the most recent 3-year period.
3. **Sections 4c, d, e - Attachment G, I & K** - provide the full safety plan, full quality assurance plan and Affirmative Action Plan- these pages will not count in the page count.

2. VOLUME II: BUSINESS/PRICE PROPOSAL FORMAT

Volume Two is comprised of Business/Price Proposal information/forms.

All of the forms must be included except the optional NM Preference Certificate and Appendix K Alternate Terms and Conditions. The Selection Committee has the right to deem the lack of a required form as a

“technical irregularity” as long as it is a matter of form rather than substance evident from the proposal document, or an insignificant mistake that can be waived or corrected without prejudice to other Offerors; that is, when there is no effect on price, quality or quantity: **However, if the form is indicated as ‘Pass/Fail’, then if it is not present, then the proposal will be deemed ‘Non- Responsive’.**

BOOKMARK 1- LETTER OF TRANSMITTAL- (PASS/FAIL) – Appendix H Submit with your proposal a completed and signed original **unaltered** the Letter of Transmittal Appendix H.

DO NOT LEAVE ANY OF THE ITEMS ON THE FORM BLANK (N/A, None, Does not apply, etc. are acceptable responses).

The Letter of Transmittal MUST:

1. Identify the submitting business entity (its Name, Mailing Address and Phone Number);
2. Identify the Name, Title, Telephone, and E-mail address of the person authorized by the Offeror’s organization to (A) contractually obligate the business entity providing the Offer, (B) negotiate a contract on behalf of the organization; and/or (C) provide clarifications or answer questions regarding the Offeror’s proposal content (*A response to B and/or C is only required if the responses differ from the individual identified in A*);
3. Identify sub-contractors, if any, anticipated to be utilized in the performance of any resultant contract award;
4. Describe any relationship with any other entity (such as State Agency, reseller, etc., that is not a sub-contractor identified in #3), if any, which will be used in the performance of this awarded contract; and
5. Be signed and dated by the person identified in #2 above; attesting to the veracity of the information provided and acknowledging (a) the organization’s acceptance of the Conditions Governing the Procurement stated in Section II.C.1, (b) the organizations acceptance of the Section V Evaluation Factors, and (c) receipt of any and all amendments to the RFP.

Failure to respond to ALL items as indicated above, will result in Offeror’s disqualification.

BOOKMARK 2 – PRICE PROPOSAL (PASS/FAIL)

Price Proposal Form – Appendix C - Each Offeror shall complete the Price Proposal Form and include this form in Volume II: Business/Price Proposal. The proposal, bearing original signatures, must be typed or hand-written in ink on the Price Proposal Form and submitted in Volume Two. Late proposals will be disqualified and returned to the Offeror unopened.

BOOKMARK 3- SUBCONTRACTOR LISTING FORM (PASS/FAIL)

Subcontractor Listing Form- Appendix B- This form is required In accordance with the “Subcontractor Fair Practices Act”, **the following listing is required to be submitted on the form:**

- 1) Name of each subcontractor who will be performing work or rendering service on the public works project and whose total contract will be \$260,000.00 or more.
- 2) Location of place of business (city or county).
- 3) Type of work and/or service to be performed by the subcontractor.
- 4) Public Works Registration No. The owner may not accept a bid on a public works project from a subcontractor that does not provide proof of the required registration if asked. Each subcontractor’s number will be checked on the DWS website for validity.

In addition to this Subcontractor Listing form, the Offeror must list their Public Works Registration Number on the Appendix C Price Proposal Form. If the number is not active at the time of proposal or not listed at all with the Labor and Industrial Division of the Department of Workforce Solutions, their proposal may be rejected.

BOOKMARK 4 – CAMPAIGN CONTRIBUTION DISCLOSURE FORM (PASS/FAIL)

Campaign Contribution Disclosure Form – Appendix D - Offeror must complete, sign, and return

the Campaign Contribution Disclosure Form, APPENDIX D, as a part of their proposal. This requirement applies regardless of whether a covered contribution was made or not made for the positions of Governor and Lieutenant Governor or other identified official. **Failure to complete and return the signed, unaltered form will result in Offeror's disqualification.**

BOOKMARK 5 – ANTITRUST CLAIMS

Assignments of Antitrust Claims Form – Appendix E - Each Offeror shall complete the Assignment of Antitrust Claims Form. Subcontractor, suppliers and sub subcontractors do not complete the form at this time.

BOOKMARK 6 – DEA CERTIFICATION

Department of General Service State Purchasing Division Agency Certification Form – Appendix F - Each Offeror shall complete and submit this form.

BOOKMARK 7 – NM HEALTH COVERAGE

New Mexico Health Coverage Form – Appendix G - Each Offeror shall complete and submit this form.

BOOKMARK 8 – BOND (PASS /FAIL)

Bond - Attachment F - Submit bid security bond as required. See Section IV below.

BOOKMARK 9 – NON-VIOLATION OF LABOR CODES

Affidavit of Non-Violation of Labor Codes - Attachment J - Submit the notarized Affidavit.

BOOKMARK 10 – NM PREFERENCE CERTIFICATES (OPTIONAL)

NM Preference Certificate - Attachment B -

To ensure adequate consideration and application of §13-1-21 NMSA 1978 (as amended), Offeror must submit a copy of its valid New Mexico/Native American Resident

Preference Certificate or its valid New Mexico/Native American Resident Veteran Preference with its proposal. Certificates for preferences must be obtained through the New Mexico Department of Taxation & Revenue <http://www.tax.newmexico.gov/Businesses/in-state-veteran-preference-certification.aspx>.

BOOKMARK 11 – ALTERNATE TERMS AND CONDITIONS (OPTIONAL)

Alternate Contract Terms and Conditions – Appendix K if applicable. Any alternate Terms and Conditions will be reviewed by the Selection Committee. As a note: in the Contract, the clauses related to Indemnification will not be altered.

IV. SECURITY AND BONDS

A. BID SECURITY BOND FOR PRICE PROPOSAL

Bid security in an amount equal to at least five percent (5%) of the amount of the Bid shall be a bond provided by a surety company authorized to do business in this State, or the equivalent in cash, a cashier's check, or otherwise supplied in a form satisfactory to the Owner (Section 13-1-146, NMSA 1978) and approved in writing by the Owner in advance. All 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.

The bid security shall be in the amount of five percent (5%) of the highest Bid amount submitted, unless

otherwise stipulated, pledging that the Bidder will enter into a Contract with the Owner on the terms stated herein and will furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty.

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

1. The Contract has been executed and bonds have been furnished,
2. the specified time has elapsed so that Bids may be withdrawn, or
3. All Bids have been rejected.

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

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

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.

B. SECURITY BOND FOR FAITHFUL PERFORMANCE

After contract award, the successful Offeror will furnish and maintain bonds covering the faithful performance of Work that is executed under the Contract, and the payment of all obligations arising there under, in an amount equal to one hundred percent (100%) of the Contract sum executed as adjusted, and with such sureties secured through the Offeror's usual sources, licensed to do business in the State of New Mexico and as may be agreeable to the parties.

C. TIME OF DELIVERY AND FORM OF BONDS

1. If awarded the Contract, the Offeror will provide Performance, Labor, and Materials Payment Bonds in an amount of the project cost. The Offeror will, prior to commencement of Work, furnish such bonds.
2. The bonds will be written on the AIA Document A312, Performance Bond and Labor and Material Payment Bond.
3. The Offeror will require the Attorney-In-Fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of his Power of Attorney.

V. EVALUATION

A. EVALUATION POINTS SUMMARY

Finalist listing - A maximum total of 1,000 points are possible in scoring each proposal for the Finalist list evaluation. The Evaluation Committee will evaluate the proposals and may conduct interviews with only the Finalist Offerors.

The evaluation criteria to be used by the Evaluation Committee for the proposal Finalist list and the corresponding point values for each criterion are as follows:

EVALUATION FACTORS

- | | |
|---|--------------------------------|
| 1. Past Performance , documented record of performance of the Prime Contractor and subcontractors on projects of a similar nature relative to budget and schedule, quality of work and customer satisfaction with applicable laws and regulations..... | 220 points |
| 2. Project staffing /craft labor capabilities, participation in skill training, reliable staffing sources, reliable project staffing..... | 200 points |
| 3. Management Plan , management and administration of the team and team resources, technical approach to the project, safety plan and programs..... | 140 points |
| 4. Health and Safety with respect to project safety and quality assurance and Quality Control | 140 points |
| 5. Price Proposal (Price Proposal submittal) based on requirements set forth in RFP..... | 300 points |
| | SUBTOTAL |
| | 1,000 points |
| 6. New Mexico Business Preference for in-state businesses (optional) | <u>up to 100 points</u> |
| TOTAL possible for FINALIST LISTING | 1,100 points |
| Finalist Offerors chosen if Oral Presentations. | |
| 7. Oral Presentation (if held) | <u>250 points</u> |
| TOTAL possible points | 1,350 points |

B. EVALUATION FACTORS

The completed Statement of Qualification forms will be reviewed by the Evaluation Committee for accuracy and completeness. Each prospective Offeror must answer all of the questions and provide all requested information, where applicable. Any Offeror failing to do so may be deemed not responsive and not responsible with respect to this qualification at the sole discretion of Evaluation Committee. Prime Contractors are hereby informed that in making evaluations and determinations, the Selection Committee is not restricted to the minimum information required for Qualification Statements and that any relevant information regarding performance from reliable sources may be considered.

The Statement of Qualification form will be submitted under Evaluation Factor #2, Project Staffing but a number of items in the Statement will be evaluated under other Factors.

The brief explanation of each evaluation category is meant to provide transparency to the General Contractors for the specific documents that the Selection Committee will be reviewing. The Evaluation Factor descriptions will be a general guideline for scoring and each bullet will be factored into the scoring:

1. **Past Performance:** (220 points) – Two pages, exclusive of Attachments A & E
 - Complete General Contractor’s Statement of Qualifications (attached under Factor #2, not here)- Sections 1, 2 & 3 apply.
 - **Attachment A** - For each of five projects, past performance summary and past capability to meet schedules, meet budgets and meet project administration requirements for comparable projects/contracts. Provide specific information about schedule, budget and change orders.
 - **Attachment E** - List all projects completed in the past three years for Governmental Agencies. List agency contact information, budget and length of project. If there were any significant challenges to overcome, describe how they were handled. If no challenges, indicate ‘no challenges’” If project was

over/under budget or didn't meet schedule, explain reasons.

- **On a separate piece of paper**, describe any past experience with business office construction. Subcontractor experience will qualify.
 - **On the same separate piece of paper**, list up to five other references on similar contracts or projects not listed as any of your five projects above. Include name, title, organization, relevant contract or project, phone, and email.
 - **Appendix I Reference Questionnaires are to be submitted directly to the Procurement Manager, not to be submitted with the Offeror's proposal.** Properly submitted Reference Questionnaires will be considered in this Factor.
2. **Project Staffing:** (200 points) – three pages, exclusive of Statement of Qualifications form, Attachments D, M, and N including resumes (Attachment C) (please limit resumes to one page per person) and Appendix B Subcontractor Listing
- **Statement of Qualifications submittal (Appendix A).** Although the Statement of Qualifications deals with topics in other sections, it should be submitted here under Project Staffing. Sections 4 & 5 apply to this factor.
 - **Attachment C** - Provide 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 each key project personnel. Add a list of projects that are relevant and their role on the project.
 - **Attachment D** - Organizational Chart(s)- provide a wire diagram that shows the organization of the lines of authority within the General Contractor's firm and then between them and the subs.
 - **Attachments M & N** – Clarifications and Explanations; Additional Information (optional)
 - **On a separate piece of paper (up to three pages)**, describe Offeror's resources and team with their certifications and experience.
 - **On the same piece of paper**, address extent to which your key personnel have worked together as a team on projects of the same or greater magnitude and on projects of the same nature.
2. **Management Plan:** (140 points) – five pages, exclusive of the Statement of Qualifications to be submitted under separate cover and exclusive of any site plans and schedules
- Statement of Qualifications (submitted under Factor #2) Sections 10, 11, 15 apply to this factor.
 - **Attachment L** - Management Plan- provide a brief narrative of your standard major project procedures including project management, estimating, cost and schedule control, quality control and site supervision. Provide a description of the overall project methods employed to deal with site constraints, occupied campus, and adjacent buildings. Including description of the Owner's responsibilities. Provide a description and conceptual site plan for staging areas, delivery routes, possible crane locations, etc. Using a high-level schedule, demonstrate how the phasing and construction will flow and show your ability to meet the schedule.
3. **Health and Safety:** (140 points)
- Statement of Qualifications submittal- (submitted under Factor #2)- Section 6 applies to this factor.
 - Statement of Qualifications #6b-Designate the competent person responsible for and capable of implementing the safety and health program/plan.
 - Statement of Qualifications- #6c & d. Describe and firm's past record of achievement of health and safety targets (including IR Rate (Recordable Incidence Rate)).
 - Statement of Qualification- #6e & - Appropriate answers to two questions.
 - **Attachment H** - Letter from Insurance Carrier showing EMR (Experience Modification Rate) and

Insurance ACORD form

- **Attachments G, I & K** - Inclusion of your full QA, Safety Plans and Affirmative Action Plans is required.

4. **Price:** (300 points)

- **Appendix C** - Complete the Price Proposal Form
- Price offered is responsive to the RFP requirements and instructions and is realistic in respect to project plans and specifications.
- Points are calculated using the following formula:

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

5. **NM Resident Business Preference or NM Veteran Preference:** (0, 50, 100 points)

Points will be awarded based on Offeror's ability to provide a copy of a current valid certificate issued by the NM Taxation and Revenue Department (Attachment B)

- **NM Resident Business/Contractor Preference**

The application for preference may be downloaded at the following website:

<http://www.tax.newmexico.gov/Businesses/in-state-veteran-preference-certification.aspx>

Fifty points will be awarded to an Offeror who qualifies as a Resident Business by submitting a copy of their current valid Certificate. These points are added to the total points received for the Evaluation Criteria.

- **NM Veteran Contractor Preference**

The application for preference may be downloaded at the following website:

<http://www.tax.newmexico.gov/Businesses/in-state-veteran-preference-certification.aspx>

One hundred points will be awarded to an Offeror who qualifies as a Resident Veteran Business by submitting a copy of their current valid Certificate. These points are added to the total points received for the Evaluation Criteria.

- Proposers may not be awarded both the Resident Business Preference and the Resident Veteran Business Preference points. In the case where a Proposer has both certifications, the greater of the two will be used.

100 points- Valid Resident Veterans' Certificate received

50 points- Valid Resident Business/contractors Certificate received

0 points – no valid certificate received.

6. **Oral Presentations (Interviews, 250 points):** If interviews are held, the Evaluation Committee shall score each question. The same questions will be issued to each short-listed firm 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.

C. EVALUATION PROCESS

1. All Offeror proposals will be reviewed for compliance with the requirements and specifications stated within the RFP. Proposals deemed non-responsive will be eliminated from further consideration.
2. The Procurement Manager may contact the Offeror for clarification of the response as specified in Section II. B.7.
3. Responsive proposals will be evaluated on the factors in Section IV, which have been assigned a point value in Section V. The responsible Offerors with the highest scores will be selected as Finalist Offerors, based upon the proposals submitted. Interview points shall be added to the previous scores. The resultant totals will be used to determine which Finalist Offeror will bring the best value to the State.

In accordance with 13-1-117 NMSA 1978, the responsible Offerors whose proposals are most advantageous to the State taking into consideration the Evaluation Factors in Section V will be recommended for award (as specified in Section II.B.12). Please note, however, that a serious deficiency in the response to any one factor may be grounds for rejection regardless of overall score.

APPENDICES AND ATTACHMENTS TO FOLLOW

**APPENDIX A, PART 1 - GENERAL CONTRACTOR'S STATEMENT OF
QUALIFICATIONS
PART 1 ORGANIZATION**

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? _____

1. LICENSING and RESPONSIBILITY MATTERS

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 (Explain)

f. Does your firm hold all applicable Business licenses required by State (New Mexico) or Local Public Bodies?

License Number: _____ Jurisdiction: _____

Name of License Holder, exactly as it appears on file with jurisdictional authorities. Issue

Date: _____ Expiration Date: _____

License Number: _____ Jurisdiction: _____

Name of License Holder, exactly as it appears on file with jurisdictional authorities.

Issue Date: _____ Expiration Date: _____

License Number: _____ Jurisdiction: _____

APPENDIX A, PART 1 - GENERAL CONTRACTOR'S STATEMENT OF QUALIFICATIONS

Name of License Holder, exactly as it appears on file with jurisdictional authorities. Issue

Date: _____ Expiration Date: _____

License Number: _____ Jurisdiction: _____

g. Is your firm and/or any of its Principals free from formal or proposed debarment from public works, federal, state or local jurisdictions?

Yes No (attach explanation)

h. Is your firm and/or any of its Principals free from conviction of or from judgments rendered against them for commission of fraud or criminal offenses in connection with obtaining or performing public works, federal, state or local jurisdictions?

Yes No (attach explanation)

2. EXPERIENCE

a. Has your firm completed **5 or more Governmental** (public) projects since **2010**? Complete **Attachment A** for **five (5)** maximum projects listed. Choose projects Over \$10,000,000, related to office buildings if possible.

Yes Number: _____ 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 in **Attachment E**, list **any** projects that you have completed in the last 3 years for Facilities Management Division/ General Services Dept. *or other* State/Federal/City or County Agencies.

d. List the categories of work that your organization normally performs with its own forces.

| | |
|-------|-------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

APPENDIX A, PART 1 - GENERAL CONTRACTOR'S STATEMENT OF QUALIFICATIONS

3. KEY PERSONNEL EXPERIENCE

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

- a. Does your assigned **Project Manager** have the following minimum qualifications and experience? (Attach Resume in format shown at **Attachment C**)
- b. At least ten years' experience in the construction industry? Yes Number Years: _____
 No
- c. Experience on at least one construction type as identified for this project (General Construction or Trade)?
 Yes Number Projects: _____ No
- d. Experience as the main Project Manager on one (1) or more construction projects valued at ten million dollars (**\$10,000,000**) or more?
 Yes Number Projects: _____ No
- e. Does your assigned **Project Superintendent** have the following minimum qualifications and experience? (Attach Resume in format shown at **Attachment C**)
 - (1) At least **ten** years' experience in the construction industry? Yes Number Years: _____
 No
 - (2) Experience on at least **one** construction type as identified for this project (General Construction or Trade)?
 Yes Number Projects: _____ No
 - (3) Experience as the prime Project Superintendent on **one** or more construction projects valued at ten million dollars (**\$10,000,000**) or more?
 Yes Number Projects: _____ No
- f. Does your assigned **Safety Program Manager** have the following minimum qualifications and experience? (Attach Resume in format shown at **Attachment C**)
 - (1) At least **five (5)** years' experience in a safety management role? Yes Number Years: _____ No
 - (2) Experience on at least **one** construction type as identified for this project (General Construction or Trade)?
 Yes Number Projects: _____ No
- g. List the individuals your firm will assign as your project management team, and the roles/functions each individual will perform during the construction/occupancy phase.
 - (1) Project Manager: _____ Years with your firm: _____
Present Position/Job Title: _____ Years *in this Position*: _____List other project(s) this person has had a similar role for the past ten years.

APPENDIX A, PART 1 - GENERAL CONTRACTOR'S STATEMENT OF QUALIFICATIONS

Is your Project Manager a Principal or Officer of the firm? Yes No

(2) Superintendent: _____ Years with your firm: _____

Present Position/Job Title: _____ Years *in this Position*: _____

List other project(s) this person has had a similar role for the past ten years.

Is your Superintendent a Principal or Officer of the firm? Yes No

(3) Safety Manager: _____ Years with your firm: _____

Present Position/Job Title: _____ Years *in this Position*: _____

List other project(s) this person has had a similar role for the past ten years.

Is your Safety Manager a Principal or Officer of the firm? Yes No

(4) QA/QC Manager: _____ Years with your firm: _____

Present Position/Job Title: _____ Years *in this Position*: _____ Is

your QA/QC Manager a Principal or Officer of the firm? Yes No

- h. Please include a wire organizational diagram (**Attachment D**) of the management team that will be assigned to these projects. Identify relationships, duties and responsibilities and key roles of each individual.

APPENDIX A, PART 1 - GENERAL CONTRACTOR'S STATEMENT OF QUALIFICATIONS

6. SAFETY

- a. Does your firm have a written safety program compliant with current State regulations? Provide one electronic or hard copy of your firm's safety program as **Attachment G**. If you choose not to attach it, then present proof of it such as an index or list of the topics covered.

Yes No (Explain)

- 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 |
|----------------|-----------------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

- c. Submit a letter from your insurance carrier listing your company's Workmen's Compensation Experience Modification Rate (EMR) for the most recent three-year policy period average. Include as part of **ATTACHMENT H**. Additionally, provide the EMR for the past five (5) years below:

2021 _____ / 2020 _____ / 2019 _____ / 2018 _____ / 2017 _____

- d. Provide the information requested below for the years shown using U.S. Bureau of Labor Statistics Guidelines to determine recordability and lost workdays from your firm's OSHA 300 logs. *Explain if higher than normal.*

Total Recordable Injury/Illness Case Rate:

2021: _____ 2020: _____ 2019: _____ 3-year average: _____

Lost Workday Case Rate:

2021: _____ 2020: _____ 2019: _____ 3-year average: _____

- 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 (Explain)

- f. Has your firm had any OSHA fines or jobsite fatalities in the last three years?

Yes (Explain) No

7. INSURANCE & CLAIMS HISTORY

- a. Is your firm free from 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 party?

APPENDIX A, PART 1 - GENERAL CONTRACTOR'S STATEMENT OF QUALIFICATIONS

e. Has the firm been assessed liquidated damages due to scheduling for any project in the past **ten** years? (Refer to **Attachment A**)

Yes No

f. If Yes, List Projects and reason.

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?

Yes No (Explain)

b. Please provide documentation to substantiate this (**Attachment J**)

c. Is the firm free of all Sub-Contractor Fair Practices Act violations for the past **five (5)** years?

Yes No (Explain)

12. AFFIRMATIVE ACTION POLICY

a. Does your firm have an active Affirmative Action Policy? Yes No

b. Provide one copy of the current policy (**Attachment K**).

13. NEW MEXICO RESIDENT BUSINESS PREFERENCE

a. If applicable, submit a copy of a valid resident business certificate or valid resident veteran business certificate issued by the New Mexico Taxation and Revenue Department. (**Attachment B**).

b. For a joint proposal submitted by both resident and nonresident contractors and submitted as a legal joint venture, provide the percentage of the work produced or performed by the nonresident contractor: _____ %
(Based on dollar amount of contract).

14. MANAGEMENT PLAN

Provide a narrative of your typical construction management methods and procedures including project cost and schedule control, quality control, site supervision and subcontractor supervision. Provide a narrative description of your typical project process. Include a discussion of responsibilities and deliverables, with typical durations for a \$10,000,000 project.

Please comment on how your team would describe success in this effort. (**Attachment L**).

15. CLARIFICATIONS/EXPLANATIONS (if necessary)

a. Please provide further explanation of items indicated requiring explanation, or other additional information to further explain any of the questions asked in this Qualification Statement

APPENDIX A, PART 1 - GENERAL CONTRACTOR'S STATEMENT OF QUALIFICATIONS

(Attachment M).

- b. Additional information provided as outlined in the Request for Proposal (written qualification limitation of fifteen pages) will be attached as **Attachment N**.

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 Code

Telephone

STATEMENT OF QUALIFICATIONS

ATTACHMENTS INCLUDED:

(Please check all attachments included in this Submittal)

- A Project Experience of similar complexity and scope
- B Resident Business and/or Veteran Preference Certificate
- C Resumes of Key Project Personnel
- D Project Management Wire Diagram (Organizational Chart)
- E FMD or Federal /State / Local Agency Project List
- F Bid Bond and Surety Letter
- G Safety Program
- H Letters from Insurance Carriers for EMR and ACORD
- I Quality Assurance Program
- J Substantiation of Non-violation of Labor Codes
- K Written Affirmative Action Policy
- L Management Plan
- M Clarifications, and Explanations (optional)
- N Additional Information (Optional)

END OF QUALIFICATION STATEMENT

STATEMENT OF QUALIFICATIONS

ATTACHMENT A

REFERENCE: 2.a. Experience in Public Facilities projects since 2014

COMPLETE ONE FORM FOR EACH PROJECT LISTED ON APPENDIX A Section 2a.

(Add explanations if over budget or schedule)

PROJECT DESCRIPTION

Project Type: _____ Contact Title: _____

Project Name: _____ Contact Name: _____

Owner: _____ Contact Phone No: _____

DESIGN PROFESSIONAL

Name: _____ Phone Number: _____

Contact: _____ Title: _____

Gross Building Area (Sq Ft): _____ [] New [] Addition [] Renovation Project

Start Date: _____ Completion Date: _____

Original Contract Amount: \$ _____ Original Contract Duration (days) _____

Final Contract Amount _____ Final Contract Duration (days) _____

With all Change Orders: \$ _____ With All Time Extensions: _____

Reasons for Change Orders/Time Extensions:

PROJECT EXECUTION

Were Liquidated Damages Assed 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 _____ Other _____

Plumbing _____ Roofing _____

Concrete _____ Special Systems _____

Fire Protection _____

CUSTOMER SATISFACTION

How was this measured? [] Customer Survey Attached [] Yes [] No [] other (describe)

ATTACHMENT B

REFERENCE 13. Resident Business Certificate or Resident Veteran Business Certificate NM

RESIDENT PREFERENCE CERTIFICATION

Attach Current Valid Taxation & Revenue Certificate

(OPTIONAL)

ATTACHMENT C

REFERENCE: 3.a, b, c, d Resumes

ATTACH **ONE PAGE** RESUMES OF THE PROPOSED PROJECT MANAGER, PROJECT SUPERINTENDENT or FOREMAN, (IF ON STAFF) SAFETY PROGRAM MANAGER, QA/QC MANAGER OTHER KEY PERSONNEL (OPTIONAL)

1.0 EDUCATION/ CERTIFICATIONS

High School, College, Trade Schools, Trade Seminars, Trade/Management Specialized Courses, etc.

All Certifications including any safety training

2.0 RELATED EXPERIENCE

Related experience should include Current and Previous Positions with Title, Duties and Responsibilities, Major Accomplishments, and Number of Personnel Supervised.

Related experience must cover, at a minimum, the time period identified in the Statement 3a (1), b (1), and c (1).

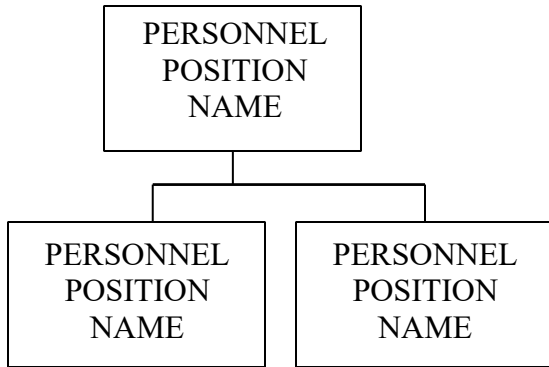
3.0 PROJECT EXPERIENCE

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

4.0 If there is space, other information that demonstrates the individual's strengths for this project.

ATTACHMENT D

REFERENCE: 3.h Wire Diagram of Project Management Structure



WIRE DIAGRAM SHOULD INCLUDE THE ENTIRE PROJECT TEAM, SUBCONTRACTOR KEY PERSONNEL AND SUPERVISION

1. Indicate the relationship between the PM/Supt of the Subcontractors and the GC PM/SUPT.
2. Indicate the relationship of the Safety Manager of the Subcontractors and GC, 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 E

REFERENCE: 2.c. Projects Completed for Facilities Management Division or other Governmental Bodies (State/City/County) in last 3 years. Federal Projects may also be included.

This can be entered into an excel spreadsheet or written in paragraph form in a WORD document.

- 1) Project name/place
- 2) Agency Name and Project Manager (plus contact information if not FMD)
- 3) Budget
- 4) Approximate Length of project
- 5) Challenges: If there were any significant challenges to overcome, describe how they were handled. If none, write 'none'.

ATTACHMENT F

REFERENCE: 5.e. Declaration of Surety

1. Bid Bond for General Contractor only
2. Surety letter

ATTACHMENT G

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

SUBMIT ONE COMPLETE ELECTRONIC VERSION WITH PROPOSAL PACKAGE

ATTACHMENT H

REFERENCE: 7.d. Letter(s) from Insurance Carrier(s)

ON LETTERHEAD OF INSURANCE CARRIER ORGANIZATION

2. Submit a letter from your insurance carrier listing your company's Workmen's Compensation Experience Modification Rate (EMR) for the most recent three-year policy period average.
3. Submit either an insurance ACORD or a letter from an insurance carrier stating that the firm is able to obtain insurance in the limits stated in the GC Qualification's Statement Section 7. C.

ATTACHMENT I

**REFERENCE: 9.b Written Quality Assurance Program SUBMIT ONLY ONE COMPLETE
ELECTRONIC COPY**

ATTACHMENT J

REFERENCE: 12.b Affidavit of non-violation of Labor codes

Name of Firm:

Address:

Project Reference: NMERB Headquarters Building

Request for Proposal No: 30-35200-23-00000

Affidavit of Non-violation of Labor Codes

TO: Facilities Management Division, GSD State of New Mexico

The undersigned officer of _____ hereby states that

_____ has, during the past five 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 K

REFERENCE: 12.b Copy of Affirmative Action Policy Submit one electronic copy of the Firm's complete Affirmative Action Policy.

ATTACHMENT L

REFERENCE: 14. Management Plan

ATTACHMENT M

REFERENCE: 15.a Clarifications/Explanations

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

ITEM REF

NUMBER

COMMENTS

ATTACHMENT N

REFERENCE: 15.b Additional Information

Additional written qualifications (optional) are limited to a maximum of fifteen pages of text/photos, single sided, excluding a single cover letter, title page, table of contents, dividers and covers. Material should be limited to 8-1/2" x 11" format.

APPENDIX B - SUBCONTRACTOR LISTING FORM

SUBCONTRACTOR & DEPARTMENT OF WORKFORCE SOLUTIONS INDUSTRIAL & LABOR DIVISION LISTING REQUIREMENTS

This form was developed in conjunction with the New Mexico Branch Association of General Contractors, to help clarify requirements under the “**Sub-Contractors Fair Practices Act**” of 1988, **Sections 13-4-31 to 13-4-42 NMSA 1978**, and subsequent changes thereto. Architects, State Agencies and Local Public Bodies are encouraged to use it when soliciting Public Works Projects, as that term is defined in the procurement code, Sections 13-1-66.1 and 13-1-91 NMSA 1978.

Date: _____ Project No: _____ RFP No: 30-35200-23-00000

Project Name: _____

Contractor: _____

Authorized Signature: _____

In accordance with the “Subcontractor Fair Practices Act”, **the following listing is required to be submitted with this bid:**

- 1) **Name of each subcontractor who will be performing work or rendering service on the public works project and whose total contract will be the greater of:
A. \$5,000.00; or
B. \$260,000.00 which represents one/half of one percent of the total project (to be estimated by the architect and/or engineer of record).**
- 2) **Location of place of business (city or county).**
- 3) **Type of work and/or service to be performed by the subcontractor.**
- 4) **Public Works Registration No. for any subcontractors that submit a bid over \$60,000 for a public work project. The owner may not accept a bid on a public works project from a subcontractor that does not provide proof of the required registration. If the value of work is below the \$60,000 threshold requiring registration, note “BELOW THRESHOLD” under Public Works Registration No.**

NOTE: YOUR BID MAY BE DEEMED NON-RESPONSIVE IF ALL FOUR ITEMS ABOVE ARE NOT ADDRESSED

Note: The Statute Does Not Require the Following Listings:

- (1) 2nd tier subcontractors;
- (2) Material, suppliers;
- (3) Subcontractors whose contract is less than the greater of A or B above.

Be advised, the Architect Engineer may require additional information

By signing this document, the contractor and/or subcontractor 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 State of New Mexico, but only to the

APPENDIX B - SUBCONTRACTOR LISTING FORM

extent that such overcharges are passed on to the State. 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 State, including the right to any treble damages attributable thereto

List of Subcontractors: (Please do NOT include suppliers) (Please DO include any Services subcontractors)

Name & License No. Address (City or County) Work to be performed Public Works Registration No.

Name & License No. Address (City or County) Work to be performed Public Works Registration No.

Name & License No. Address (City or County) Work to be performed Public Works Registration No.

Name & License No. Address (City or County) Work to be performed Public Works Registration No.

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Name & License No. Address (City or County) Work to be performed Public Works Registration No.

Name & License No. Address (City or County) Work to be performed Public Works Registration No.

APPENDIX C – PRICE PROPOSAL FORM

Date of Proposal: _____

New Mexico State Contractor's License No. _____

Contractor's New Mexico Gross Receipts Tax No. _____

Contractor's Federal Employee Identification No. _____

Public Works Registration Number:

Pursuant to: 13-4-13.1. Public works contracts; registration of contractors and subcontractors.

Submitting a bid valued at more than \$60,000 for any portion of a public works project greater than \$60,000 that is subject to the New Mexico Public Works Act is required to be registered with the Labor and Industrial Division of the Department of Workforce Solutions prior to submitting a bid. The Facilities Management Division may reject any and all bids that, fail to provide a Public Works Registration number for the prime contractor and all other listed contractors or subcontractors.

State of New Mexico, ERB RFP# 30-35200-23-00000

Project Name: ERB New Headquarters Building

Proposal of (company name): _____ (Hereinafter called the "Offeror") organized and existing under the laws of the State of New Mexico, doing business as a Corporation, Partnership or Individual. **(Circle correct one).**

To: Educational Retirement Board, Santa Fe New Mexico (hereinafter called the "Owner") for (include any allowances and exclusive of GRT):

The undersigned, as an authorized representative for the Offeror named above, in compliance with the Request for Proposal for the above named project, having examined the drawings and specifications, with related documents, and having examined the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project, including the availability of labor, materials and supplies, hereby proposes to furnish all labor, materials and supplies, and to construct the project in accordance with the contract documents at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the contract documents, of which this proposal is a part.

The undersigned Offeror’s representative also acknowledges receipt of the following: Amendment No: _

_____, dated _____,

Amendment No: _____, dated _____,

Amendment No: _____, dated _____,

Amendment No: _____, dated _____.

APPENDIX C – PRICE PROPOSAL FORM

APPENDIX C – PRICE PROPOSAL FORM

BASE Price: The Offeror agrees to perform all work for the construction of the project as described in the Project Manual and as shown on the Drawings for the following lump sum: (Amounts to be shown in both words and figures. In case of a discrepancy, the amount shown in words will govern, **please print.**) All sums will **exclude** NM Gross Receipts Tax.

Refer to Project Manual Alternates.

Total Base Proposal Lump Sum: _____
_____ Dollars, (\$ _____)

**Total Alternate No. 1 –
Proposal Lump Sum:** _____
_____ Dollars, (\$ _____)

**Total Alternate No. 2 –
Proposal Lump Sum:** _____
_____ Dollars, (\$ _____)

The Offeror understands that the contract will be awarded in accordance with the provisions of the RFP and that the Owner reserves the right to reject any or all proposals and to waive any formalities in the proposals.

The Offeror agrees that this price will be good and may not be withdrawn for a period of sixty six calendar days after the scheduled closing time for receiving proposals.

Upon receipt of written notice of acceptance of this Price, Offeror should execute the final contract within sixty six calendar days barring unforeseen circumstances related to the State Board of Finance approval.

APPENDIX C – PRICE PROPOSAL FORM

Respectfully Submitted,

By: _____ Date: _____

(Authorized Signature)

By: _____

(Same Name, Printed or Typed)

Title: _____

Company: _____

Address: _____ Phone: _____

_____ Zip: _____

Fax: _____ Email: _____

(Affix Corporate Seal if proposal by Corporation):

APPENDIX D - CAMPAIGN CONTRIBUTION DISCLOSURE FORM

Pursuant to Chapter 81, Laws of 2006, any prospective contractor seeking to enter into a contract with any state agency or local public body must file this form with that state agency or local public body. 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.

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 Contribution” 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 official’s behalf for the purpose of electing the official to either statewide or local office. “Campaign Contribution” 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.

“Contract” means any agreement for the procurement of items of tangible personal property, services, professional services, or construction.

“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.

APPENDIX D - CAMPAIGN CONTRIBUTION DISCLOSURE FORM

DISCLOSURE OF CONTRIBUTIONS:

Contribution Made By: _____

Relation to Prospective Contractor: _____

Name of Applicable Public Official: _____

Date Contribution(s) Made: _____

Amount(s) of Contribution(s) _____

Nature of Contribution(s) _____

Purpose of Contribution(s) _____

(The above fields are unlimited in size)

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)

APPENDIX E - ASSIGNMENT OF ANTITRUST CLAIMS

TO BE EXECUTED BY GENERAL CONTRACTORS, SUBCONTRACTORS, SUPPLIERS, AND
SUBSUBCONTRACTORS OF CONTRACTORS ON STATE CONTRACTS

FIRM NAME:

PROJECT:

ADDRESS:

PHONE
NO.:

PROJECT NO:

_____ agrees that any and all claims which it may have or may inure to it for overcharges resulting from antitrust violations as to goods, services, and materials purchased in connection with the above-referenced project are hereby assigned to the State of New Mexico, but only to the extent that such overcharges are passed on to the State. It is agreed that the undersigned 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.

FIRM: _____

BY: _____

Signed by Individual empowered to obligate Suppliers,
Subcontractors, or Subsubcontractors

TITLE: _____

APPENDIX F - SPD AGENCY CERTIFICATION FORM

New Mexico General Services Department State Purchasing Division
AGENCY CERTIFICATION FORM

Educational Retirement Board hereby certifies the following in regard to the attached contractual agreement between the Agency and (name of contractor):

- 1) This Contractor IS/IS NOT (circle one) a former state employee. *
2) This Contractor IS/IS NOT (circle one) a current state employee or a legislator or the family member of a current state employee or legislator, or a business in which a current state employee or legislator or family member of the current state employee or legislator has an interest of greater than twenty percent (20%). *

NOTE: Former employee requires a Former Employee Affidavit (found on CRB website), PERA letter if contractor retired from State of New Mexico and an AG's letter if contractor separated/retired within the last five years to the date of signed contract. No contract may be awarded to a current state employee or legislator, or to a family member of a current state employee or legislator, or to a business in which any of these persons has an interest greater than 20% unless such contract is awarded pursuant to the Procurement Code, except such persons or businesses cannot be awarded a contract through a sole source or small purchase. (See Section 10-16-1 through 10-16-18 NMSA 1978 for further information.)

- 3) This Contractor is a (check one): FOR PROFIT VENDOR
NOT FOR PROFIT VENDOR

- 4) This PSA DOES COMPLY with the Governor's Guidelines for Contract Review and Re- Evaluation and IS an essential contract for the Agency.

Signature of Agency Representative** Date

I certify that the information stated in paragraphs 1-3 is true.

Signature of Contractor Date

*If the Contractor is covered by one of these categories, please contact your CRB Analyst for the required procedures for processing.

**Must be an authorized signatory for the Agency.

**APPENDIX G - NEW MEXICO EMPLOYEES HEALTH COVERAGE VERIFICATION
FORM**

CONTRACTOR NAME: _____

Contractor agrees to comply with all federal and state laws and regulations regarding the obligation of employers to provide health insurance for employees. If the Contractor has more than fifty full-time-equivalent employees, the Affordable Care Act applies. If the Contractor has between two and fifty full-time-equivalent employees, the Contractor shall notify the employees of the availability of health insurance through beWellnm online at <http://www.beWellnm.com>.

(Check # 1 only if it applies) (**Must** check #2)

1. I have less than 51 employees at this time.
2. I agree with the terms and conditions stated above.

Signature of Offeror: _____ Date _____

APPENDIX H LETTER OF TRANSMITTAL

Please complete this form in its entirety. Failure to **sign and/or submit** this form will result in the disqualification of Offeror's proposal.

(N/A, None, Does not apply, etc. are acceptable responses.)

RFP#: 30-35200-23-00000

1. Identify the following information for the submitting organization:

| | |
|------------------------|--|
| Offeror Name | |
| Mailing Address | |
| Telephone | |
| FED ID# | |
| NM CRS# | |

2. Identify the individual(s) authorized by the organization to (A) contractually obligate, (B) negotiate, and/or (C) clarify/respond to queries on behalf of this Offeror:

| | A Contractually Obligate | B Negotiate* | C Clarify/Respond to Queries* |
|-------------------|---|-------------------------------|--|
| Name | | | |
| Title | | | |
| E-mail | | | |
| Teleph one | | | |

* If the individual identified in Column A also performs the functions identified in Columns B & C, then no response is required for those Columns. If separate individuals perform the functions in Columns B and/or C, they must be identified.

3. Use of subcontractors (Select one):

No subcontractors will be used in the performance of any resultant contract, OR

The following subcontractors will be used in the performance of any resultant contract:

(Attach extra sheets, as needed)

4. Will any other entity/-ies (such as a State Agency, reseller, etc., that is not a subcontractor identified in #3 above) be used in the performance of any resultant contract? (Select one)

No.

Yes. Identify entity/-ies:

(Attach extra sheets, as needed)

By signing the form below, the Authorized Signatory attests to the accuracy and veracity of the information provided on this form, and explicitly acknowledges the following: _____

- On behalf of the submitting-organization identified in item #1, above, I accept the Conditions Governing the Procurement, as required in Section II.C.1. of this RFP;
- I concur that submission of our proposal constitutes acceptance of the Evaluation Factors contained in Section V of this RFP; and
- I acknowledge receipt of any and all amendments to this RFP, if any.

Sign: _____ Date: _____
Authorized Signature and Date (*Must be signed by the individual identified in item #2.A, above.*)

APPENDIX I

RFP for NM Educational Retirement Board Headquarters Building

REFERENCE QUESTIONNAIRE FOR:

(Name of company **requesting** reference)

This form is being submitted to your company for completion as a business reference for the company listed above. This form is to be returned to the State of New Mexico, Educational Retirement Board via e-mail:

Name: Megan Mannila
Telephone: (505) 476-6105
Email: Megan.Mannila@erb.nm.gov

no later than **July 13, 2023 at 3pm** and **must not** be returned to the company requesting the reference.

For questions or concerns regarding this form, please contact the State of New Mexico Procurement Agent listed above. When contacting us, please be sure to include the Request for Proposal name listed at the top of this page.

CONFIDENTIAL INFORMATION WHEN COMPLETED

| | |
|--|--|
| Company providing reference: | |
| Contact name and title/position | |
| Contact telephone number | |
| Contact e-mail address | |

QUESTIONS:

1. In what capacity have you worked with this contractor in the past? Size of project in terms of square feet or dollars?

2. How would you rate this firm's knowledge and expertise in the construction of a health care or residential type of facility?

_____(3 = Excellent; 2 = Satisfactory; 1 = Unsatisfactory; 0 = Unacceptable) COMMENTS:

3. How would you rate the contractor's flexibility relative to changes in the project scope and timelines?
_____ (3 = Excellent; 2 = Satisfactory; 1 = Unsatisfactory; 0 = Unacceptable) COMMENTS:

4. What is your level of satisfaction with documents produced by the contractor?
_____ (3 = Excellent; 2 = Satisfactory; 1 = Unsatisfactory; 0 = Unacceptable) COMMENTS:

5. How would you rate the dynamics/interaction between the contractor and your staff? (3 = Excellent; 2
_____ = Satisfactory; 1 = Unsatisfactory; 0 = Unacceptable)
COMMENTS:

6. Who were the contractor's principal workers involved in your project and how would you rate them individually? Would you comment on the skills, knowledge, behaviors or other factors on which you based the rating?

(3 = Excellent; 2 = Satisfactory; 1 = Unsatisfactory; 0 = Unacceptable)

List the Contractor's Project Manager and Superintendent. And also Assistant Superintendent or Project Engineer

Name: _____ Rating: _____

Name: _____ Rating: _____ Name: _____

_____ Rating: _____ Name: _____

_____ Rating: _____

COMMENTS:

7. How satisfied are you with the quality of the work by the contractor?
_____ (3 = Excellent; 2 = Satisfactory; 1 = Unsatisfactory; 0 = Unacceptable) COMMENTS:

8. How satisfied are you with this contractor's services?
_____ (3 = Excellent; 2 = Satisfactory; 1 = Unsatisfactory; 0 = Unacceptable) COMMENTS:
9. How satisfied are you with this contractor's responsiveness to issues after project completion?
_____ (3 = Excellent; 2 = Satisfactory; 1 = Unsatisfactory; 0 = Unacceptable) COMMENTS:
10. Was the project completed in a timely fashion? If not, why not?
_____ (3 = Excellent; 2 = Satisfactory; 1 = Unsatisfactory; 0 = Unacceptable) COMMENTS:
11. With which aspect(s) of this contractor's work are you least satisfied? COMMENTS:
12. Would you recommend this contractor's work to your organization again? COMMENTS:

END OF QUESTIONNAIRE

APPENDIX J – SAMPLE CONTRACT IN PARTS A, B, C & Exhibit A&B

ATTACHED SEPARATELY AT END OF RFP

APPENDIX K – ALTERNATE CONTRACT TERMS AND CONDITIONS

PUT ON COMPANY LETTERHEAD IF APPLICABLE

SECTION 00 3100 - AVAILABLE PROJECT INFORMATION

PART 1 GENERAL

1.1 EXISTING CONDITIONS

- A. Certain information relating to existing surface and subsurface conditions and structures is available to bidders but will not be part of Contract Documents, as follows:
- B. Geotechnical Report: Entitled Geotechnical Engineering Report; New Mexico Educational Retirement Board (NMERB) Office Building, 5211 Las Soleras Drive, Santa Fe, NM, dated March 28,2022.
 - 1. Original copy is available immediately following this section.
 - 2. This report identifies properties of below grade conditions and offers recommendations for the design of foundations, prepared primarily for the use of Architect.
 - 3. The recommendations described shall not be construed as a requirement of this Contract, unless specifically referenced in Contract Documents.
 - 4. This report, by its nature, cannot reveal all conditions that exist on the site. Should subsurface conditions be found to vary substantially from this report, changes in the design and construction of foundations will be made, with resulting credits or expenditures to the Contract Price accruing to Owner.

1.2 PERMITS

- A. Architect has submitted plans for the following permits and/or approvals that are not required to be secured prior to commencement of construction work on this project,
 - 1. Building Permit.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION



Geotechnical Engineering Report

**New Mexico Educational Retirement Board (NMERB) Office Building
5211 Las Soleras Drive
Santa Fe, New Mexico.**

March 28, 2022

Terracon Project No. 66215271

Prepared for:

New Mexico Educational Retirement Board
Santa Fe, New Mexico

Prepared by:

Terracon Consultants, Inc.
Albuquerque, New Mexico



March 28, 2022

New Mexico Educational Retirement Board
701 Camino de los Marquez
Santa Fe, New Mexico 87502-0129



Attn: Mr. Lawrence Esquibel/Deputy Director
P: (505) 476-6114
E: Lawrence.Esquibel@state.nm.us

Re: Geotechnical Engineering Report
New Mexico Educational Retirement Board (NMERB) Office Building
5211 Las Soleras Drive
Santa Fe, New Mexico.
Terracon Project No. 66215271

Dear Mr. Esquibel:

We have completed the Geotechnical Engineering services for the above referenced project. This study was performed in general accordance with Terracon Proposal No. P66215271 dated December 16, 2021 and the State of New Mexico Professional Services Contract #22-352-0000-02215. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations, floor slabs, pavements, and earthwork for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions, please contact us.

Sincerely,
Terracon Consultants, Inc.

Elliott M. Gordon, E.I.
Staff Engineer

Michael E. Anderson, P.E.
Principal



REPORT TOPICS

| | |
|------------------------------------|----|
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| INTRODUCTION..... | 1 |
| SITE CONDITIONS..... | 1 |
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Note: This report was originally delivered in a web-based format. For more interactive features, please view your project online at client.terracon.com.

ATTACHMENTS

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

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

REPORT SUMMARY

| Topic ¹ | Overview Statement ² |
|---|--|
| <p>Project Description</p> | <p>The project will include the development of an approximate 3-acre parcel. Development will consist of the construction of a one (1)-story office building, detention ponds, pavements, miscellaneous structures, and utilities.</p> <p>Expected traffic for pavement areas:</p> <ul style="list-style-type: none"> ■ 100 to 200 autos/light trucks per day ■ Up to 7 medium-duty delivery/trash trucks and <1 tractor-trailer truck per week. |
| <p>Geotechnical Characterization</p> | <p>Medium dense to very dense sand soils and soft to hard clay and silt soils Groundwater was not encountered</p> |
| <p>Earthwork</p> | <p>An existing large soil stockpile is located on-site. If this soil is planned to be used for structural fill for the project, additional assessment prior to or during construction should be performed to confirm suitability.</p> <p>Shallow excavations into the soils are anticipated to be accomplished with conventional equipment. However, very dense or hard soils encountered on some portions of the site may require extra effort or heavy-duty excavating equipment.</p> <p>Soils are sensitive to moisture variation.</p> <p>Loose, soft, or caving soils may be encountered during construction that will require recompaction</p> <p>Any loose or soft soils will require removal and recompaction</p> |
| <p>Shallow Foundations</p> | <p>Shallow foundations bearing on a zone of structural fill/recompacted existing soils will be sufficient for support of the proposed structures.</p> <p>Allowable bearing pressure = 1,500 to 2,500 psf</p> <p>Expected settlements: approximately 1-inch total, < 3/4-inch differential</p> |
| <p>Deep Foundations</p> | <p>Deep foundations will not be necessary for the planned development</p> |
| <p>Below-Grade Structures</p> | <p>Not applicable</p> |
| <p>Pavements</p> | <p>With subgrade prepared as noted in Earthwork.</p> <p>Concrete:</p> <ul style="list-style-type: none"> ■ 5 inches Portland Cement Concrete (PCC) in Light Duty areas ■ 5.5 inches PCC in Medium Duty areas <p>Asphalt:</p> <ul style="list-style-type: none"> ■ 2.5 inches Asphaltic Concrete (AC) over 6 inches aggregate base course (ABC) in Light Duty areas ■ 3.5 inches AC over 6 inches ABC in Medium Duty areas |
| <p>General Comments</p> | <p>This section contains important information about the limitations of this geotechnical engineering report.</p> |
| <ol style="list-style-type: none"> 1. If the reader is reviewing this report as a pdf, the topics above can be used to access the appropriate section of the report by simply clicking on the topic itself. 2. This summary is for convenience only. It should be used in conjunction with the entire report for design purposes. | |

Geotechnical Engineering Report

New Mexico Educational Retirement Board (NMERB) Office Building

5211 Las Soleras Drive

Santa Fe, New Mexico.

Terracon Project No. 66215271

March 28, 2022

INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering services performed for the proposed NMERB office building to be located at 5211 Las Soleras Drive in Santa Fe, New Mexico.. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Groundwater conditions
- Foundation design and construction
- Site preparation and earthwork
- Excavation considerations
- Floor slab design and construction
- Seismic site classification per IBC
- Lateral earth pressures
- Pavement design and construction
- Concrete corrosion potential

The geotechnical engineering scope of services included the advancement of 7 test borings to depths ranging from approximately 6 to 26.5 feet below existing site grades.

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

SITE CONDITIONS

| Item | Description |
|------------------------------|--|
| Parcel Information | The project is located at 5211 Las Soleras Drive in Santa Fe, New Mexico.. |
| Existing Improvements | Site is undeveloped and rough graded |
| Current Ground Cover | Earthen, lightly to moderately vegetated |
| Existing Topography | Site appears to slope down towards the south and southeast (assumed) |

PROJECT DESCRIPTION

| Item | Description |
|--|---|
| Information Provided | Information was provided in an email on December 13, 2021 from Dekker Perich Sabatini (DPS) that included a site location/aerial photo and “NMERB New Office Building - Geotechnical Investigation RFP” dated December 14, 2021 and included a Scope of Work (SOW). |
| Project Description | The project will consist of the design and construction of a one-story, slab-on-grade office building. |
| Proposed Structure | Building on the order of about 25,000 square feet in plan area The building will be slab-on-grade (non-basement). |
| Building Construction (assumed) | Steel frame Slab-on-grade |
| Finished Floor Elevation | Within about 1 to 2 feet from existing site grade (assumed) |
| Maximum Loads | <ul style="list-style-type: none"> ■ Columns: 50 kips ■ Walls: 1.5 kips per linear foot (klf) ■ Slabs: 150 pounds per square foot (psf) - assumed |
| Grading/Slopes | Up to about 2 to 3 feet of cut/fill will be required to develop final grade (assumed). |
| Below-Grade Structures | Not Applicable |
| Free-Standing Retaining Walls | Short retaining walls could be constructed as part of site development to achieve final grades. |
| Pavements | Paved driveway and parking will be constructed on the parcel. We assume both rigid (concrete) and flexible (asphalt) pavement sections should be considered. Please confirm this assumption. Anticipated traffic is as follows: <ul style="list-style-type: none"> ■ Autos/light trucks: 100 to 200 vehicles per day ■ Light delivery and trash collection vehicles: 7 vehicles per week ■ Tractor-trailer trucks: <1 vehicles per week The pavement design period is 20 years. |
| Estimated Start of Construction | 2022 |

GEOTECHNICAL CHARACTERIZATION

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting, and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of site preparation and foundation options. Conditions encountered at each exploration point are indicated on the individual logs. The individual logs can be found in the **Exploration Results** section and the GeoModel can be found in the **Figures** section of this report.

As part of our analyses, we identified the following model layers within the subsurface profile. For a more detailed view of the model layer depths at each boring location, refer to the **GeoModel**.

| Model Layer | Layer Name | General Description |
|-------------|---|---|
| 1 | Loose to Very Dense Coarse-Grained Soils | Sand soils with variable amounts of silt, clay, and gravel. |
| 2 | Soft to Hard Fine-Grained Soils | Clay and silt soils with variable amounts of sand and gravel. |

Shear Wave Profile

The results of the shear wave velocity profile test indicated an average shear wave velocity of the upper 100 feet of the site of 1,366 feet per second (fps).

Groundwater Conditions

The boreholes were observed while drilling and after completion for the presence and level of groundwater. The water levels observed in the boreholes can be found on the boring logs in **Exploration Results** and are summarized below.

Groundwater was not observed in the borings while drilling, or for the short duration the borings could remain open. Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff, and other factors not evident at the time the borings were performed. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

GEOTECHNICAL OVERVIEW

The site appears suitable for the proposed construction based upon geotechnical conditions encountered in the test borings. The site could be characterized generally by medium dense to very dense sand soils and soft to hard clay and silt soils. Subsurface soils which exhibit a low to

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moderate compression/consolidation potential when subjected to increases in moisture and loading conditions will require particular attention in the design and construction.

An existing large soil stockpile is located on-site. The stockpile was estimated to cover approximately ¼ of the site and was estimated to be on the order of about 10 to 15 feet in height. The exposed soils were observed to consist of sands, gravels, and some cobbles. Based upon these observations, the soils exposed in the stockpile appear to be compatible with the on-site soils. If these soils are planned to be used for structural fill for the project, additional assessment prior to or during construction should be performed to confirm suitability.

Based on the geotechnical subsurface exploration, the laboratory test results, and our engineering analyses, we recommend that the proposed structures be supported on shallow spread/continuous footings or a monolithic slab with turned down edges bearing on a zone of structural fill/recompacted native soils. Any newly placed fill required to raise the site to construction grade can be used as the structural fill/recompacted soils zone.

On-site soils are suitable for use as structural fill for foundations, floor slabs, and pavements. Any loose or soft existing soils will require removal and recompaction.

Shallow excavations into the subsurface soils are anticipated to be accomplished with conventional equipment. However, very dense and hard soils encountered on some portions of the site may require extra effort or heavy-duty excavating equipment.

Geotechnical engineering recommendations for foundation systems and other earth connected phases of the project are outlined below. The recommendations contained in this report are based upon the results of field and laboratory testing (which are presented in **Exploration Results**), engineering analyses, and our current understanding of the proposed project. The **General Comments** section provides an understanding of the report limitations.

The **General Comments** section provides an understanding of the report limitations.

EARTHWORK

Earthwork is anticipated to include clearing and grubbing, excavations and fill placement and/or re-compaction of native soils. The following sections provide recommendations for use in the preparation of specifications for the work. Recommendations include critical quality criteria, as necessary, to render the site in the state considered in our geotechnical engineering evaluation for foundations, floor slabs, and pavements.

Site Preparation

Strip and remove vegetation, debris, and other deleterious materials from proposed building, structure, and pavement areas. Exposed surfaces should be free of mounds and depressions which could prevent uniform compaction.

The subgrade should be proof-rolled with an adequately loaded vehicle such as a fully-loaded tandem-axle dump truck. The proof-rolling should be performed under the direction of the Geotechnical Engineer. Areas excessively deflecting under the proof-roll should be delineated and subsequently addressed by the Geotechnical Engineer. Such areas should either be removed or modified by stabilizing with lime, fly ash, kiln dust, cement, or geotextiles. Excessively wet or dry material should either be removed or moisture conditioned and recompacted.

Fill Material Types

Fill required to achieve design grade should be classified as structural fill and general fill. Structural fill is material used below, or within five feet of structures, pavements, or constructed slopes. General fill is material used to achieve grade outside of these areas. Earthen materials used for structural and general fill should meet the following material property requirements:

| Soil Type ¹ | USCS Classification | Acceptable Parameters (for Structural Fill) |
|------------------------|--------------------------------|--|
| Granular | GW, GP, GM, GC, SW, SP, SM, SC | Less than 50% Passing No. 200 sieve |
| On-Site Soils | SW-SM, SM, SC, CL, CL-ML, ML | On-site soils are suitable for use as structural fill ² |

1. Structural and general fill should consist of approved materials free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade. A sample of each material type should be submitted to the Geotechnical Engineer for evaluation prior to use on this site.
2. If the stockpile soils are planned to be used for structural fill for the project, additional assessment prior to or during construction should be performed to confirm suitability.

Fill Compaction Requirements

Structural and general fill should meet the following compaction requirements.

| Item | Structural Fill | General Fill |
|-------------------------------|---|-------------------------|
| Maximum Lift Thickness | 8 inches or less in loose thickness when heavy, self-propelled compaction equipment is used 4 to 6 inches in loose thickness when hand-guided equipment (i.e. jumping jack or plate compactor) is used | Same as Structural fill |

| Item | Structural Fill | General Fill |
|--|--|---|
| Minimum Compaction Requirements ^{1, 2} | 95% of max. below foundations and within 1 foot of finished pavement subgrade 95% of max. above foundations, below floor slabs, and more than 1 foot below finished pavement subgrade | 90% of max. |
| Water Content Range ¹ | Granular: -3% to +3% of optimum | As required to achieve min. compaction requirements |

1. Maximum density and optimum water content as determined by the modified Proctor test (ASTM D 1557).
2. If the granular material is a coarse sand or gravel, or of a uniform size, or has a low fines content, compaction comparison to relative density may be more appropriate. In this case, granular materials should be compacted to at least 70% relative density (ASTM D 4253 and D 4254).

Utility Trench Backfill

Utility trenches are a common source of water infiltration and migration. Utility trenches penetrating beneath the structures should be effectively sealed to restrict water intrusion and flow through the trenches, which could migrate below the structures. The trench backfill should be placed and compacted to comply with the water content and compaction recommendations for structural fill as outlined previously in this report.

Grading and Drainage

All grades must provide effective drainage away from the structures during and after construction and should be maintained throughout the life of the structures. Water retained next to the building can result in soil movements greater than those discussed in this report. Greater movements can result in unacceptable differential floor slab and/or foundation movements, cracked slabs and walls, and roof leaks.

Exposed ground should be sloped and maintained at a minimum three (3)% away from the building for at least five (5) feet beyond the perimeter of the structures. Locally, flatter grades may be necessary to transition ADA access requirements for flatwork. After structure construction and landscaping have been completed, final grades should be verified to document effective drainage has been achieved. Grades around the structures should also be periodically inspected and adjusted, as necessary, as part of the structure’s maintenance program. Where paving or flatwork abuts the structures, a maintenance program should be established to effectively seal and maintain joints and prevent surface water infiltration.

Earthwork Construction Considerations

Shallow excavations into the subsurface soils are anticipated to be accomplished with conventional equipment. However, very dense and hard soils encountered on some portions of the site may require extra effort or heavy-duty excavating equipment. Any soft or loose fill and

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native soils encountered during construction will require recompaction. Upon completion of filling and grading, care should be taken to maintain the subgrade water content prior to construction of floor slabs. Construction traffic over the completed subgrades should be avoided. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. Water collecting over or adjacent to construction areas should be removed. If the subgrade freezes, desiccates, saturates, or is disturbed, the affected material should be removed, or the materials should be scarified, moisture conditioned, and recompacted prior to floor slab construction.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, "Excavations" and its appendices, and in accordance with any applicable local, and/or state regulations.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety, or the contractor's activities; such responsibility shall neither be implied nor inferred.

Construction Observation and Testing

The earthwork efforts should be monitored under the direction of the Geotechnical Engineer. Monitoring should include documentation of adequate removal of vegetation and topsoil, proof-rolling, and mitigation of areas delineated by the proof-roll to require mitigation.

Each lift of compacted fill should be tested, evaluated, and reworked, as necessary, until approved by the Geotechnical Engineer prior to placement of additional lifts. Each lift of fill should be tested for density and water content at a frequency of at least one test for every 2,500 square feet of compacted fill in the building areas and 5,000 square feet in pavement areas. One density and water content test should be performed for every 50 linear feet of compacted utility trench backfill.

In areas of foundation excavations, the bearing subgrade should be evaluated under the direction of the Geotechnical Engineer. If unanticipated conditions are encountered, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer's evaluation of subsurface conditions, including assessing variations and associated design changes.

SHALLOW FOUNDATIONS

If the site has been prepared in accordance with the requirements noted in **Earthwork**, the following design parameters are applicable for shallow conventional and post-tensioned slab foundations.

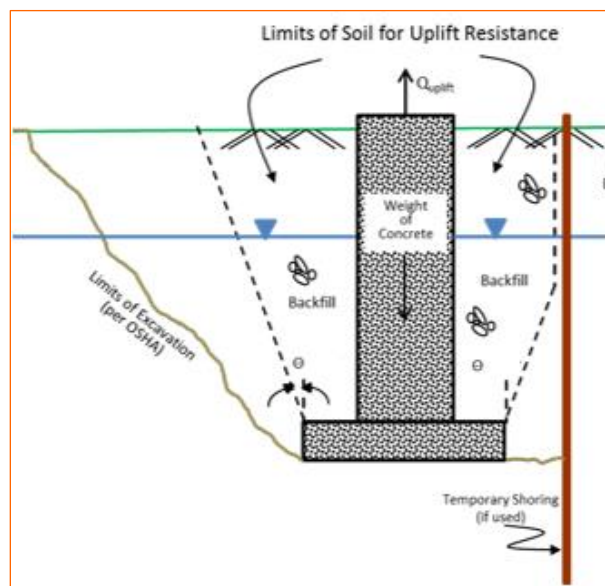
Design Parameters – Conventional Foundations

| Item | Description |
|---|---|
| Maximum Net Allowable Bearing pressure ^{1, 2} | <ul style="list-style-type: none"> ■ <u>Building</u>: 2,500 psf ■ <u>Retaining Walls, Trash Dumpster Screen Walls, and Miscellaneous Structures</u>: 1,500 psf |
| Required Bearing Stratum ³ | <ul style="list-style-type: none"> ■ <u>Building</u>: 3 feet of structural fill/recompacted native soils ■ <u>Retaining Walls, Trash Dumpster Screen Walls and Miscellaneous Structures</u>: 1 foot of structural fill/recompacted native soils |
| Minimum Foundation Dimensions | Columns: 30 inches Continuous: 18 inches |
| Ultimate Passive Resistance ⁴ (equivalent fluid pressures) | 360 pcf |
| Ultimate Coefficient of Sliding Friction ⁵ | 0.35 |
| Minimum Embedment below Finished Grade ⁶ | Exterior footings: 24 inches Interior footings: 12 inches |
| Estimated Total Settlement from Structural Loads ² | Less than about 1 inch |
| Estimated Differential Settlement ^{2, 7} | About 2/3 of total settlement |

| Item | Description |
|------|---|
| 1. | The maximum net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. An appropriate factor of safety has been applied. Values assume that exterior grades are no steeper than 20% within 10 feet of structure. The allowable bearing pressure will be based upon final loading conditions and soil conditions after grading operations have been performed. |
| 2. | Values provided are for maximum loads noted in Project Description . |
| 3. | Zone of structural fill/recompacted existing soils. May include any additional fill required to raise the site to construction grade. Unsuitable or soft/loose fill or native soils should be over-excavated and replaced per the recommendations presented in the Earthwork . |
| 4. | Use of passive earth pressures require the sides of the excavation for the spread footing foundation to be nearly vertical and the concrete placed neat against these vertical faces or that the footing forms be removed and compacted structural fill be placed against the vertical footing face. |
| 5. | Can be used to compute sliding resistance where foundations are placed on suitable soil/materials. Should be neglected for foundations subject to net uplift conditions. |
| 6. | Embedment necessary to minimize the effects of frost and/or seasonal water content variations. For sloping ground, maintain depth below the lowest adjacent exterior grade within 5 horizontal feet of the structure. |
| 7. | Differential settlements are as measured over a span of 50 feet. |

Design Parameters - Uplift Loads

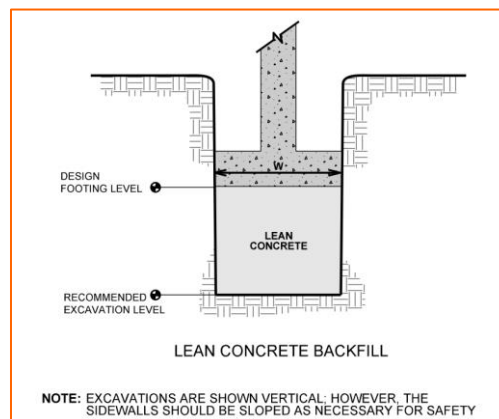
Uplift resistance of the spread footings can be developed from the effective weight of the footing and the overlying soils. As illustrated on the subsequent figure, the effective weight of the soil prism defined by diagonal planes extending up from the top of the perimeter of the foundation to the ground surface at an angle, θ , of 20 degrees from the vertical can be included in uplift resistance. The maximum allowable uplift capacity should be taken as a sum of the effective weight of soil plus the dead weight of the foundation, divided by an appropriate factor of safety. A maximum total unit weight of 120 pcf should be used for the backfill.



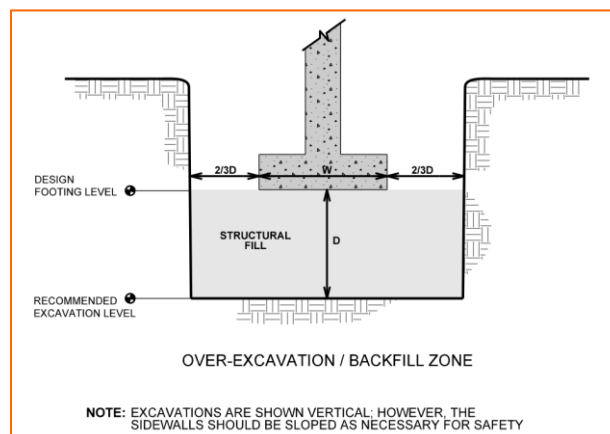
Foundation Construction Considerations

As noted in **Earthwork**, the footing excavations should be evaluated under the direction of the Geotechnical Engineer. The base of all foundation excavations should be free of water and loose soil, prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance. Care should be taken to prevent wetting or drying of the bearing materials during construction. Excessively wet or dry material or any loose/disturbed material in the bottom of the footing excavations should be removed/reconditioned before foundation concrete is placed.

If unsuitable bearing soils are encountered at the base of the planned footing excavation, the excavation should be extended deeper to suitable soils, and the footings could bear directly on these soils at the lower level or on lean concrete backfill placed in the excavations. This is illustrated on the sketch below.



Over-excavation for structural fill placement below footings should be conducted as shown below. The over-excavation should be backfilled up to the footing base elevation, with engineered fill placed, as recommended in the **Earthwork** section.



SEISMIC CONSIDERATIONS

The seismic design requirements for buildings and other structures are based on Seismic Design Category. Site Classification is required to determine the Seismic Design Category for a structure. The Site Classification is based on the upper 100 feet of the site profile defined by a weighted average value of either shear wave velocity, standard penetration resistance, or undrained shear strength in accordance with Section 20.4 of ASCE 7 and the International Building Code (IBC). Based on the results of the shear wave velocity profile test performed at the site, which indicates a value of 1,366 feet per second (fps), it is our professional opinion that the site classification is Site Class **C**.

FLOOR SLABS

Design parameters for floor slabs associated with the conventional shallow foundations assume the requirements for **Earthwork** have been followed. Specific attention should be given to positive drainage away from the structures.

Floor Slab Design Parameters

| Item | Description |
|--|--|
| Floor Slab Support ¹ | Minimum 2 feet of structural fill/recompacted existing soils |
| Estimated Modulus of Subgrade Reaction ² | 200 pounds per square inch per inch (psi/in) for point loads |

1. Consideration should be given for floor slabs being constructed structurally independent of building footings or walls to reduce the possibility of floor slab cracking caused by differential movements between the slab and foundation. May include any fill required to raise the site to construction grade
2. Modulus of subgrade reaction is an estimated value based upon our experience with the subgrade condition, the requirements noted in **Earthwork**, and the floor slab support as noted in this table. It is provided for point loads. For large area loads the modulus of subgrade reaction would be lower.

The use of a vapor retarder should be considered beneath concrete slabs on grade covered with wood, tile, carpet, or other moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer should refer to ACI 302 and/or ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder.

Saw-cut control joints should be placed in the slab to help control the location and extent of cracking. For additional recommendations refer to the ACI Design Manual. Joints or cracks should be sealed with a water-proof, non-extruding compressible compound specifically recommended for heavy duty concrete pavement and wet environments.

Where floor slabs are tied to perimeter walls or turn-down slabs to meet structural or other construction objectives, our experience indicates differential movement between the walls and slabs will likely be observed in adjacent slab expansion joints or floor slab cracks beyond the length of the structural dowels. The Structural Engineer should account for potential differential settlement through use of sufficient control joints, appropriate reinforcing, or other means.

Floor Slab Construction Considerations

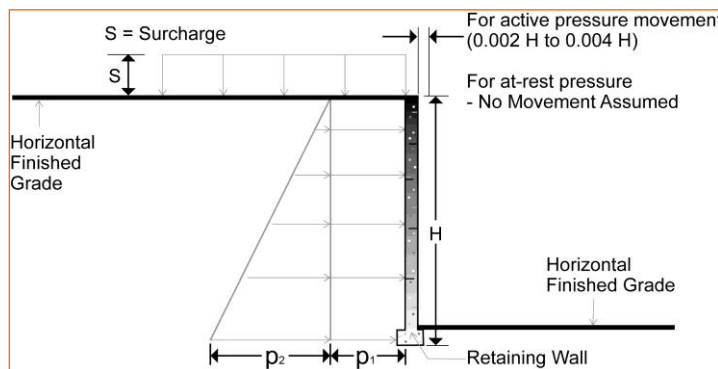
Finished subgrade, within and for at least 10 feet beyond the floor slab, should be protected from traffic, rutting, or other disturbance and maintained in a relatively moist condition until floor slabs are constructed. If the subgrade should become damaged or desiccated prior to construction of floor slabs, the affected material should be removed and structural fill should be added to replace the resulting excavation. Final conditioning of the finished subgrade should be performed immediately prior to placement of the floor slab support course.

The Geotechnical Engineer should approve the condition of the floor slab subgrades immediately prior to placement of the floor slab support course, reinforcing steel, and concrete. Attention should be paid to high traffic areas that were rutted and disturbed earlier, and to areas where backfilled trenches are located.

LATERAL EARTH PRESSURES

Design Parameters

Structures with unbalanced backfill levels on opposite sides should be designed for earth pressures at least equal to values indicated in the following table. Earth pressures will be influenced by structural design of the walls, conditions of wall restraint, methods of construction and/or compaction and the strength of the materials being restrained. Two wall restraint conditions are shown in the diagram below. Active earth pressure is commonly used for design of free-standing cantilever retaining walls and assumes wall movement. The “at-rest” condition assumes no wall movement and is commonly used for basement walls, loading dock walls, or other walls restrained at the top. The recommended design lateral earth pressures do not include a factor of safety and do not provide for possible hydrostatic pressure on the walls (unless stated).



| Lateral Earth Pressure Design Parameters | | | |
|--|--|--|--|
| Earth Pressure Condition ¹ | Coefficient for Backfill Type ² | Surcharge Pressure ^{3, 4, 5} p_1 (psf) | Effective Fluid Pressures (psf) ^{2, 4, 5} |
| | | | Unsaturated ⁶ |
| Active (K_a) | Granular – 0.33 | $(0.33)S$ | $(40)H$ |
| At-Rest (K_o) | Granular – 0.50 | $(0.50)S$ | $(60)H$ |
| Passive (K_p) | Granular – 3.00 | --- | $(360)H$ |

1. For active earth pressure, wall must rotate about base, with top lateral movements 0.002 H to 0.004 H, where H is wall height. For passive earth pressure, wall must move horizontally to mobilize resistance.
2. Uniform, horizontal backfill, compacted to at least 95% of the ASTM D 1557 maximum dry density, rendering a maximum unit weight of approximately 120 pcf.
3. Uniform surcharge, where S is surcharge pressure.
4. Loading from heavy compaction equipment is not included.
5. No safety factor is included in these values.

Backfill placed against structures should consist of granular soils or low plasticity cohesive soils. For the granular values to be valid, the granular backfill must extend out and up from the base of the wall at an angle of at least 45 and 60 degrees from vertical for the active and passive cases, respectively.

PAVEMENTS

General Pavement Comments

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

performance is site preparation. Pavement designs noted in this section must be applied to the site which has been prepared as recommended in the **Earthwork** section. Any existing loose or soft soils should be removed and recompacted.

Pavement Design Parameters

Design of Asphaltic Cement Concrete (ACC) pavements are based on the procedures outlined in the National Asphalt Pavement Association (NAPA) Information Series 109 (IS-109). Design of Portland Cement Concrete (PCC) pavements are based upon American Concrete Institute (ACI) 330R-01; Guide for Design and Construction of Concrete Parking Lots.

The design of pavement thickness was based on the following:

- A soil characterization of medium based on the sands encountered at the site
- 85% reliability of asphalt
- A design life of 20 years
- Light Duty Traffic: 100 to 200 autos/light trucks per day
- Medium Duty Traffic: Up to 7 Delivery trucks/trash collection and <1 tractor-trailer trucks per week
- Modulus of subgrade reaction of 200 pci

Pavement Section Thicknesses

The following table provides options for ACC and PCC Sections:

| Asphaltic Cement Concrete Design | | |
|---|--------------------------------|---------------------------------|
| Layer | Thickness (inches) | |
| | Light Duty ¹ | Medium Duty ¹ |
| ACC ² | 2.5 | 3.5 |
| Aggregate Base ³ | 6 | 6 |

1. See **Project Description** for more specifics regarding Light Duty and Medium Duty traffic.
2. All materials should meet the current City of Santa Fe (CoSF) or New Mexico Department of Transportation (NMDOT) Standard Specifications for Highway and Bridge Construction.
 - Asphaltic Surface - NMDOT Type SP-III or IV: Section 423
 - Aggregate Base Course - NMDOT Type I, Class I: Section 303
3. A minimum 1.5-inch surface course should be used on ACC pavements.

| Portland Cement Concrete Design | | |
|---------------------------------|-------------------------|---------------------------------------|
| Layer | Thickness (inches) | |
| | Light Duty ¹ | Medium Duty/Dumpster Pad ³ |
| PCC ² | 5 | 5.5 |

1. See **Project Description** for more specifics regarding traffic classifications.
2. All materials should meet the current CoSF or NMDOT Standard Specifications for Highway and Bridge Construction.
 - Concrete Pavement - NMDOT Portland Cement Concrete Type C: Section 509
3. In areas of anticipated heavy traffic, fire trucks, delivery trucks, or concentrated loads (e.g. dumpster pads), and areas with repeated turning or maneuvering of heavy vehicles.

Pavement Construction Considerations

Aggregate base course should consist of a blend of sand and gravel which meets strict specifications for quality and gradation. Use of materials meeting New Mexico State Department of Transportation (NMDOT) or City of Santa Fe (CoSF) specifications is recommended. Aggregate base course material should be tested to determine compliance with these specifications prior to importation to the site.

Asphalt concrete should be obtained from an approved mix design stating the properties, optimum asphalt content, job mix formula, and recommended mixing and placing temperatures. Aggregate used in asphalt concrete should meet a particular gradation. Use of materials meeting NMDOT or CoSF SP-III or SP-IV specifications is recommended. The mix design should be submitted prior to construction to verify its adequacy. The asphalt materials should be placed in minimum and maximum lifts of about 1-½ and 3-½ inches, respectively, and should be compacted to a minimum of 93% and a maximum of 97% of maximum theoretical density (ASTM D2041).

All concrete for rigid pavements should have a minimum 28-day compressive strength of 4,000 psi and be placed with a maximum slump of 4 inches. Proper joint spacing will also be required to prevent excessive slab curling and shrinkage cracking. PCC pavement details for joint spacing, joint reinforcement, and joint sealing should be prepared in accordance with American Concrete Institute (ACI 330R-01 and ACI 325R.9-91). All joints should be sealed to prevent entry of foreign material and dowelled where necessary for load transfer.

Pavement Maintenance

The pavement sections represent minimum recommended thicknesses and, as such, periodic maintenance should be anticipated. Therefore, preventive maintenance should be planned and provided for through an on-going pavement management program. Maintenance activities are intended to slow the rate of pavement deterioration and to preserve the pavement investment. Maintenance consists of both localized maintenance (e.g., crack, and joint sealing and patching)

and global maintenance (e.g., surface sealing). Preventive maintenance is usually the priority when implementing a pavement maintenance program. Additional engineering observation is recommended to determine the type and extent of a cost-effective program. Even with periodic maintenance, some movements and related cracking may still occur and repairs may be required.

Pavement performance is affected by its surroundings. In addition to providing preventive maintenance, the civil engineer should consider the following recommendations in the design and layout of pavements:

- Final grade adjacent to paved areas should slope down from the edges at a minimum 2%.
- Subgrade and pavement surfaces should have a minimum 2% slope to promote proper surface drainage.
- Install below pavement drainage systems surrounding areas anticipated for frequent wetting.
- Install joint sealant and seal cracks immediately.
- Seal all landscaped areas in or adjacent to pavements to reduce moisture migration to subgrade soils.
- Place compacted, low permeability backfill against the exterior side of curb and gutter.
- Place curb, gutter and/or sidewalk directly on clay subgrade soils rather than on unbound granular base course materials.

CORROSIVITY

Laboratory test results indicate soluble sulfate concentrations of 57 and 190 mg/kg. These values should be used to determine potential corrosive characteristics of the on-site soils with respect to contact with the various underground materials which will be used for project construction.

Results of soluble sulfate testing indicate that ASTM Type I/II or II Portland cement is suitable for all concrete on and below grade. Foundation concrete should be designed for negligible sulfate exposure in accordance with the provisions of the ACI Design Manual, Section 318, Chapter 4.

- Use of Type I/II or II modified cement for sulfate resistance.
- Cement should have a tricalcium aluminate content of not more than 8 percent.
- Concrete mixture should contain at least 20 percent Class F fly ash.
- Provide air-entrainment of 4 to 7 percent by volume.
- Lower the water to cement ratio to 0.4 to 0.45.

GENERAL COMMENTS

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur

Geotechnical Engineering Report

New Mexico Educational Retirement Board (NMERB) Office Building ■ Santa Fe, New
March 28, 2022 ■ Terracon Project No. 66215271



between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

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

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

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, and cost estimating including, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

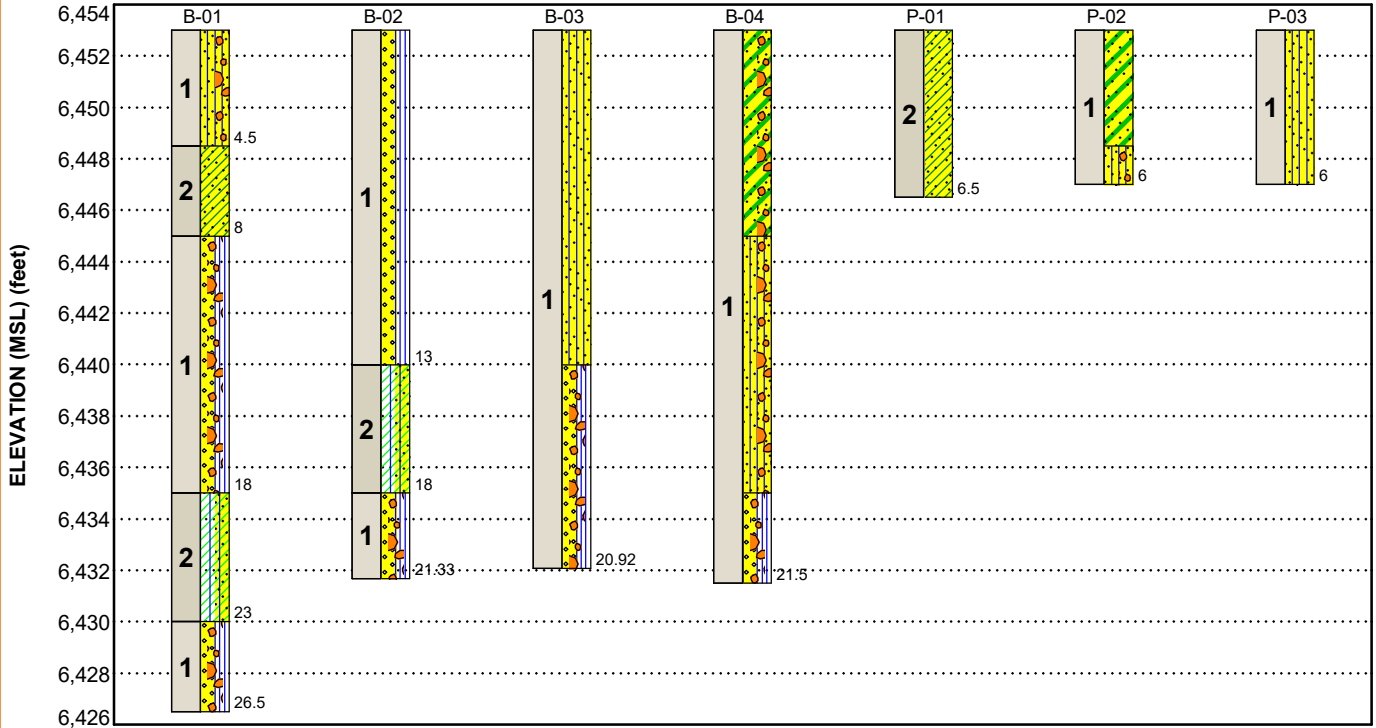
FIGURES

Contents:

GeoModel

GEOMODEL

NMERB Office Building ■ Santa Fe, New Mexico
Terracon Project No. 66215271



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

| Model Layer | Layer Name | General Description |
|-------------|--|--|
| 1 | Medium Dense to Very Dense Coarse Grained Soils | Sand soils with variable amounts of clay, silt, gravel, and cobbles. Medium dense to very dense in relative density. |
| 2 | Soft to Hard Fine Grained Soils | Clay soils with variable amounts of silt, sand, and gravel, with soft to hard consistency. |

LEGEND

- Silty Sand with Gravel
- Silty Clay with Sand
- Clayey Sand with Gravel
- Sandy Lean Clay
- Well-graded Sand with Silt
- Clayey Sand
- Well-graded Sand with Silt and Gravel
- Silty Sand

NOTES:

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

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES

| Number of Borings | Boring Designation | Boring Depth (feet) | Planned Location |
|-------------------|--------------------|---------------------|--------------------|
| 4 | B-01 through B-04 | 21.5 to 26.5 | Building Footprint |
| 3 | P-01 through P-03 | 6 to 6.5 | Pavement Areas |

Boring Layout and Elevations: Unless otherwise noted, Terracon personnel provided the boring layout. Coordinates and approximate elevations were obtained with a handheld GPS unit. If elevations and a more precise boring layout are desired, we recommend borings be surveyed following completion of fieldwork.

Subsurface Exploration Procedures: We advanced the borings with a truck-mounted drill rig using continuous flight, hollow stem augers. Three (3) samples were obtained in the upper 10 feet of each boring and at intervals of 5 feet thereafter. In the split-barrel sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon was driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. A 3-inch O.D. split-barrel sampling spoon with 2.5-inch I.D. ring lined sampler was used for sampling in the upper 5 to 10 feet. Ring-lined, split-barrel sampling procedures are similar to standard split spoon sampling procedure; however, blow counts are typically recorded for 6-inch intervals for a total of 12 inches of penetration. We observed and recorded groundwater levels during drilling and sampling. For safety purposes, all borings were backfilled with auger cuttings after their completion.

The sampling depths, penetration distances, and other sampling information was recorded on the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory for testing and classification by a Geotechnical Engineer. Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials encountered during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. The final boring logs represent the Geotechnical Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

In addition to the borings, a shear wave analysis will be performed to evaluate the 2015 IBC Site Class designation. We propose to perform a micro-tremor, soil profile shear wave analysis at the proposed building location. The survey line will be a minimum of 200 feet in length and will include about 12 geophone locations. Several data sets will be acquired on the survey line. The data sets will be processed using computer program SeisOpt®-Remi™ to investigate the shear wave

Geotechnical Engineering Report

New Mexico Educational Retirement Board (NMERB) Office Building ■ Santa Fe, New Mexico
March 28, 2022 ■ Terracon Project No. 66215271



velocity in the upper 100 feet of the soil profile. Based upon the response spectrum in the 5 to 40 hertz range, the average shear wave profile will be interpreted.

After completion of the fieldwork and data analyses, a summary report will be prepared and included in the geotechnical report. The summary report will provide the P-F Image Dispersion Modeling Picks, Rayleigh Wave Phase Velocity Dispersion curve, depth verses shear wave velocity profile for the site and 2015 IBC Site Class designation.

Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests to understand the engineering properties of the various soil strata, as necessary, for this project. Procedural standards noted below are for reference to methodology in general. In some cases, variations to methods were applied because of local practice or professional judgment. Standards noted below include reference to other, related standards. Such references are not necessarily applicable to describe the specific test performed.

- ASTM D2216 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
- ASTM D4318 Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
- ASTM D422 Standard Test Method for Particle-Size Analysis of Soils
- ASTM D2435/D2435M Standard Test Methods for One-Dimensional Consolidation Properties of Soils Using Incremental Loading
- EPA Method 300: Water soluble sulfates

The laboratory testing program often included examination of soil samples by an engineer. Based on the material's texture and plasticity, we described and classified the soil samples in accordance with the Unified Soil Classification System.

SITE LOCATION AND EXPLORATION PLANS

Contents:

Site Location Plan

Exploration Plan

Note: All attachments are one page unless noted above.

SITE LOCATION

NMERB Office Building, 5211 Las Soleras Drive ■ Santa Fe, NM
March 28, 2022 ■ Terracon Project No. 66215271

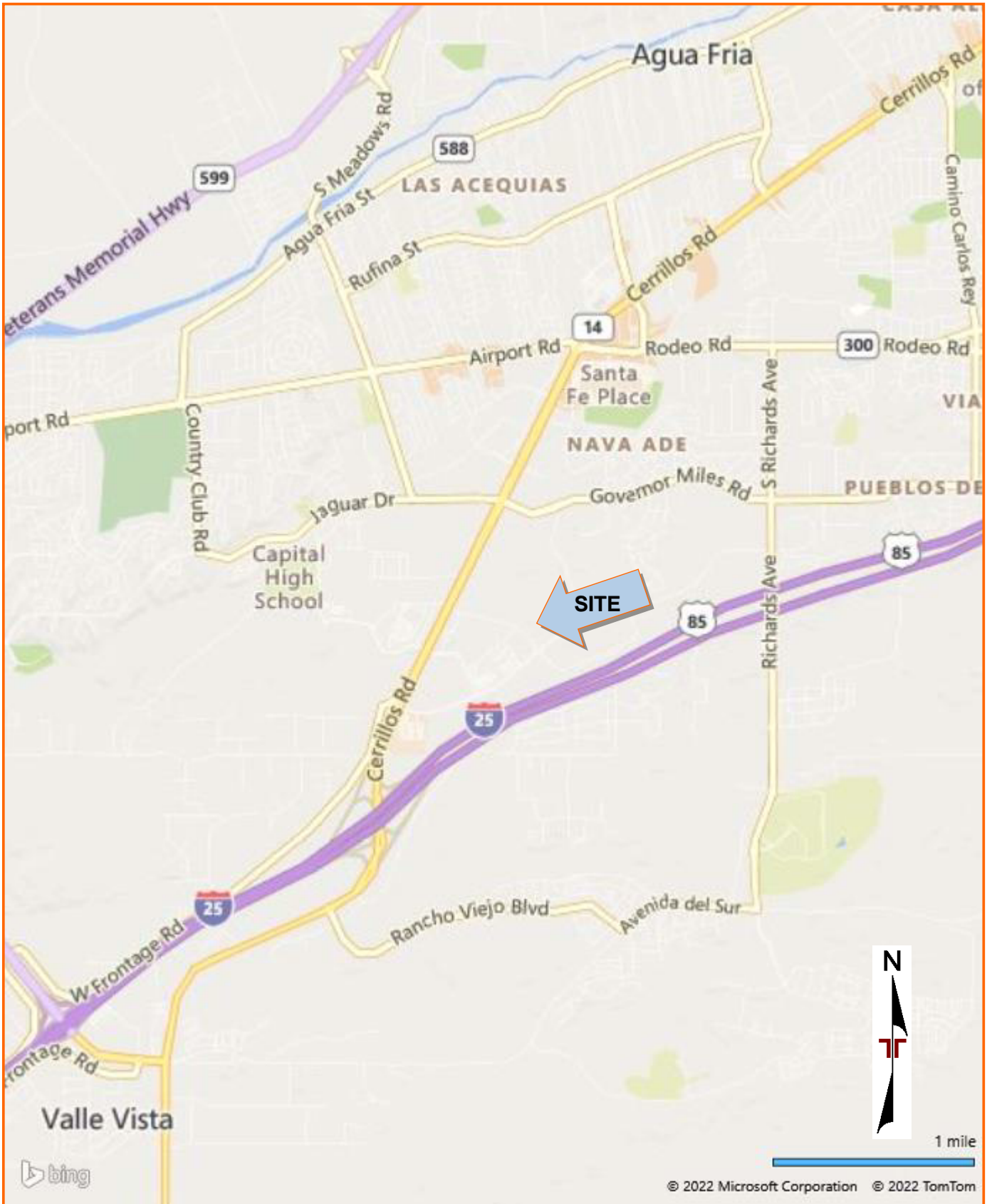


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

EXPLORATION PLAN

NMERB Office Building, 5211 Las Soleras Drive ■ Santa Fe, NM
March 28, 2022 ■ Terracon Project No. 66215271

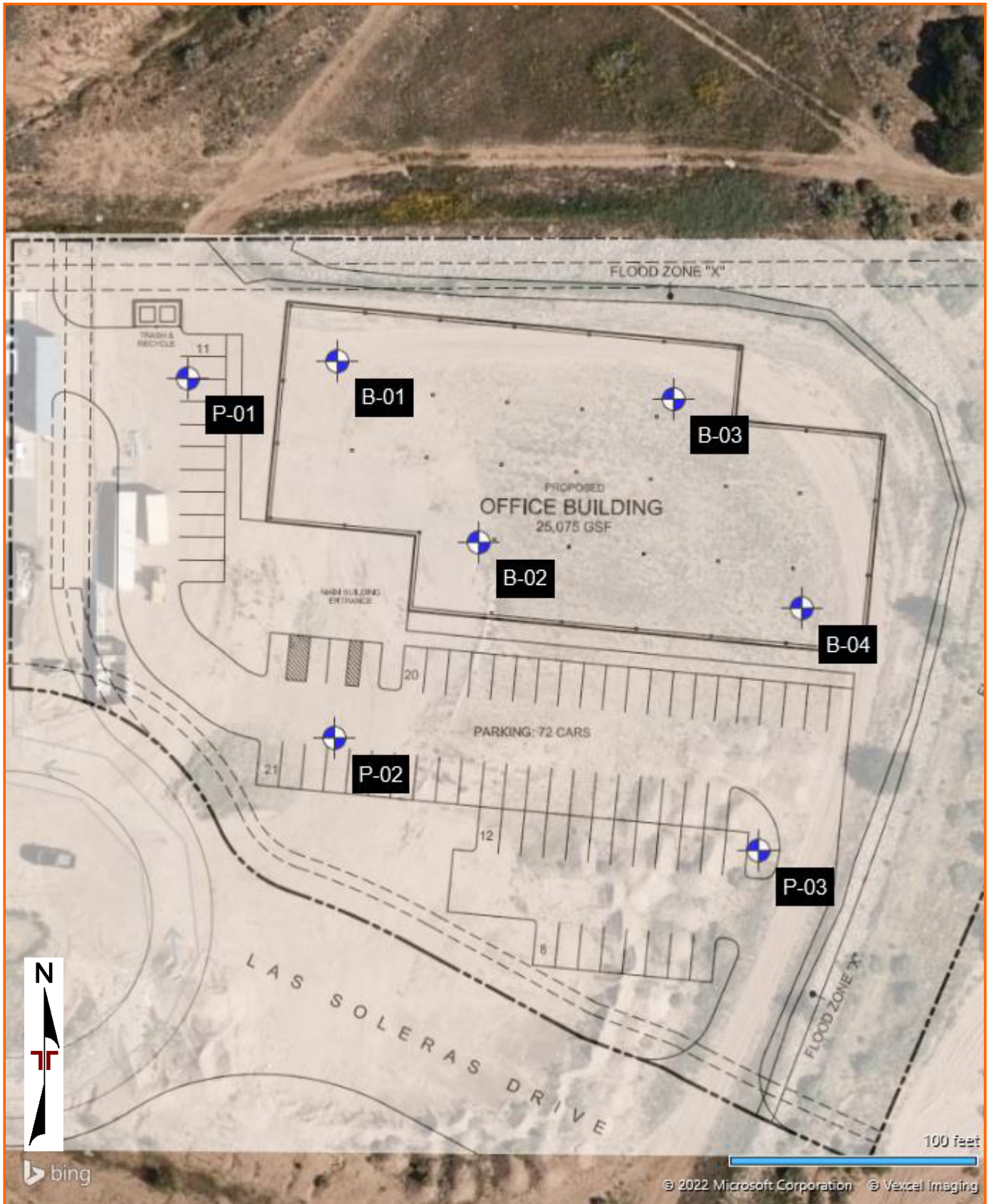


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

EXPLORATION RESULTS

Contents:

Boring Logs (B-01 through B-04 and P-01 through P-03)

Atterberg Limits

Grain Size Distribution (2 pages)

Consolidation/Swell (4 pages)

Corrosion (2 pages)

Laboratory Summary (2 pages)

Shear Wave Report (5 pages)

Note: All attachments are one page unless noted above.

BORING LOG NO. B-01

PROJECT: NMERB Office Building

CLIENT: Dekker/Perich/Sabatini, Ltd.
Albuquerque, New Mexico

SITE: Los Soleras Drive and Promenade Boulevard
Santa Fe, New Mexico

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL_66215271 NMERB OFFICE BUIL.GPJ TERRACON_DATATEMPLATE.GDT 3/28/22

| MODEL LAYER | GRAPHIC LOG | LOCATION See Exploration Plan Latitude: 35.6205° Longitude: -106.0251° Approximate Surface Elev.: 6453 (Ft.) +/- DEPTH ELEVATION (Ft.) | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | FIELD TEST RESULTS | SWELL (%) | WATER CONTENT (%) | DRY UNIT WEIGHT (pcf) | ATTERBERG LIMITS | | PERCENT FINES |
|-------------|-------------|---|-------------|--------------------------|-------------|--------------------|------------------|-------------------|-----------------------|------------------|----|---------------|
| | | | | | | | | | | LL-PL-PI | | |
| 1 | | SILTY SAND WITH GRAVEL (SM) , light brown, medium dense | 4.5 | | | 9-10-10 N=20 | | 6.9 | | | | |
| 2 | | SANDY LEAN CLAY (CL) , trace gravel, light brown, hard | 8.0 | | | 12-38/2" | 0.00 @ 500psf | 11.9 | 123 | 29-16-13 | 63 | |
| 1 | | WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM) , trace cobbles, light brown, dense to very dense | 18.0 | | | 9-20-23 N=43 | | 1.3 | | | | |
| 2 | | SILTY CLAY WITH SAND (CL-ML) , light brown with tan, hard | 23.0 | | | 16-21-30 N=51 | | 1.1 | | | | |
| 1 | | WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM) , light brown, very dense | 26.5 | | | 18-29-20 N=49 | | 8.3 | | | | |
| | | Boring Terminated at 26.5 Feet | | | | 20-25-40 N=65 | | 3.2 | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
7" Hollow Stem Auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

Elevations measured in the field

WATER LEVEL OBSERVATIONS

Groundwater not encountered



Boring Started: 02-08-2022

Boring Completed: 02-08-2022

Drill Rig: CME 55

Driller: Terracon ABQ

Project No.: 66215271

BORING LOG NO. B-02

PROJECT: NMERB Office Building

CLIENT: Dekker/Perich/Sabatini, Ltd.
Albuquerque, New Mexico

SITE: Los Soleras Drive and Promenade Boulevard
Santa Fe, New Mexico

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL_66215271 NMERB OFFICE BUIL.GPJ TERRACON_DATATEMPLATE.GDT 3/28/22

| MODEL LAYER | GRAPHIC LOG | LOCATION See Exploration Plan Latitude: 35.6203° Longitude: -106.0249° Approximate Surface Elev.: 6453 (Ft.) +/- DEPTH ELEVATION (Ft.) | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | FIELD TEST RESULTS | SWELL (%) | WATER CONTENT (%) | DRY UNIT WEIGHT (pcf) | ATTERBERG LIMITS | | PERCENT FINES |
|--|-------------|---|-------------|--------------------------|-------------|--------------------|-------------------|-------------------|-----------------------|------------------|---|---------------|
| | | | | | | | | | | LL-PL-PI | | |
| 1 | | WELL GRADED SAND WITH SILT (SW-SM) , trace gravel, light brown, medium dense to dense | 5 | | | 25/6" | -0.25 @ 500psf | 7.2 | 116 | | | |
| | | | 10 | | X | 14-6-6 N=12 | | 3.1 | | | | |
| | | | 15 | | X | 4-4-7 N=11 | | 1.6 | | NP | 8 | |
| 2 | | SILTY CLAY WITH SAND (CL-ML) , light brown, medium stiff to stiff | 15 | | X | 2-3-5 N=8 | | 9.6 | | | | |
| 1 | | WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM) , trace cobbles, light brown, very dense | 20 | | X | 21-37-50/4" | | 2.2 | | | | |
| Boring Terminated at 21.33 Feet | | | | | | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
7" Hollow Stem Auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

Elevations measured in the field

WATER LEVEL OBSERVATIONS

Groundwater not encountered



Boring Started: 02-08-2022

Boring Completed: 02-08-2022

Drill Rig: CME 55

Driller: Terracon ABQ

Project No.: 66215271

BORING LOG NO. B-03

PROJECT: NMERB Office Building

CLIENT: Dekker/Perich/Sabatini, Ltd.
Albuquerque, New Mexico

SITE: Los Soleras Drive and Promenade Boulevard
Santa Fe, New Mexico

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL_66215271 NMERB OFFICE BUIL.GPJ TERRACON_DATATEMPLATE.GDT 3/28/22

| MODEL LAYER | GRAPHIC LOG | LOCATION See Exploration Plan Latitude: 35.6205° Longitude: -106.0247° Approximate Surface Elev.: 6453 (Ft.) +/- DEPTH _____ ELEVATION (Ft.) _____ | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | FIELD TEST RESULTS | SWELL (%) | WATER CONTENT (%) | DRY UNIT WEIGHT (pcf) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|--|-------------|---|-------------|--------------------------|-------------|--------------------|-------------------|-------------------|-----------------------|------------------------------|---------------|
| 1 | | SILTY SAND (SM) , trace gravel, light brown to dark brown, medium dense to dense | 5 | X | | 10-11-10 N=21 | | 7.2 | | NP | 33 |
| | | | 5 | ▲ | | 24-26/2" | -0.03 @ 500psf | 7.0 | 115 | | |
| | | | 10 | X | ☞ | 8-6-6 N=12 | | 7.2 | | | |
| | | 13.0 _____ 6440+/- | | | | | | | | | |
| | | WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM) , trace cobbles, light brown, medium dense to very dense | 15 | X | | 3-5-7 N=12 | | 1.9 | | | |
| | | | 20 | X | | 22-50/5" | | 1.6 | | | |
| | | 20.9 _____ 6432+/- | | | | | | | | | |
| Boring Terminated at 20.92 Feet | | | | | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

| | | |
|--|--|---|
| Advancement Method: 7" Hollow Stem Auger | See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any). See Supporting Information for explanation of symbols and abbreviations. Elevations measured in the field | Notes: |
| Abandonment Method: Boring backfilled with soil cuttings upon completion. | | |
| WATER LEVEL OBSERVATIONS <i>Groundwater not encountered</i> | <p style="font-size: 0.8em; margin-top: 5px;">6805 Academy Pkwy West NE Albuquerque, NM</p> | Boring Started: 02-08-2022 Boring Completed: 02-08-2022 Drill Rig: CME 55 Driller: Terracon ABQ Project No.: 66215271 |

BORING LOG NO. B-04

PROJECT: NMERB Office Building

CLIENT: Dekker/Perich/Sabatini, Ltd.
Albuquerque, New Mexico

SITE: Los Soleras Drive and Promenade Boulevard
Santa Fe, New Mexico

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL_66215271 NMERB OFFICE BUIL.GPJ TERRACON_DATATEMPLATE.GDT 3/28/22

| MODEL LAYER | GRAPHIC LOG | LOCATION See Exploration Plan Latitude: 35.6203° Longitude: -106.0245° Approximate Surface Elev.: 6453 (Ft.) +/- DEPTH ELEVATION (Ft.) | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | FIELD TEST RESULTS | SWELL (%) | WATER CONTENT (%) | DRY UNIT WEIGHT (pcf) | ATTERBERG LIMITS | | PERCENT FINES |
|-------------|-------------|---|-------------|--------------------------|-------------|--------------------|------------------|-------------------|-----------------------|------------------|----------|---------------|
| | | | | | | | | | | LL-PL-PI | | |
| 1 | | CLAYEY SAND WITH GRAVEL (SC) , light brown, dense | 0 | | | | | | | | | |
| | | | 8.0 | 6445+/- | 5 | X | 23-27/5" | +0.03 @ 500psf | 3.6 | 120 | | |
| | | | 10 | 6435+/- | 10 | X | 13-13-17 N=30 | | 6.1 | | 30-14-16 | 25 |
| | | | 15 | 6431.5+/- | 15 | X | 5-7-6 N=13 | | 2.2 | | | |
| | | SILTY SAND WITH GRAVEL (SM) , light brown, medium dense | 18.0 | | | | | | | | | |
| | 18.0 | | 6435+/- | 20 | X | 2-6-12 N=18 | | 5.1 | | | | |
| | | WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM) , light brown, medium dense | 21.5 | | | | | | | | | |
| | 21.5 | | 6431.5+/- | 20 | X | 9-13-7 N=20 | | 2.0 | | | | |
| | | Boring Terminated at 21.5 Feet | | | | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
7" Hollow Stem Auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

Elevations measured in the field

WATER LEVEL OBSERVATIONS

Groundwater not encountered



Boring Started: 02-08-2022

Boring Completed: 02-08-2022

Drill Rig: CME 55

Driller: Terracon ABQ

Project No.: 66215271

BORING LOG NO. P-01

PROJECT: NMERB Office Building

CLIENT: Dekker/Perich/Sabatini, Ltd.
Albuquerque, New Mexico

SITE: Los Soleras Drive and Promenade Boulevard
Santa Fe, New Mexico

| MODEL LAYER | GRAPHIC LOG | LOCATION <small>See Exploration Plan</small> Latitude: 35.6205° Longitude: -106.0253° Approximate Surface Elev.: 6453 (Ft.) +/- DEPTH ELEVATION (Ft.) | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | FIELD TEST RESULTS | SWELL (%) | WATER CONTENT (%) | DRY UNIT WEIGHT (pcf) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|--------------------------------------|-------------|---|-------------|--------------------------|-------------|--------------------|-----------|-------------------|-----------------------|----------------------------------|---------------|
| 2 | | SANDY LEAN CLAY (CL) , trace gravel, light brown, soft to hard | 5 | | X | 16-28 | | 9.1 | 111 | 30-16-14 | 52 |
| | | 6.5 6446.5+/- | | | X | 3-2-2 N=4 | | 7.9 | | | |
| Boring Terminated at 6.5 Feet | | | | | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
7" Hollow Stem Auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

Elevations measured in the field

WATER LEVEL OBSERVATIONS

Groundwater not encountered



6805 Academy Pkwy West NE
Albuquerque, NM

Boring Started: 02-08-2022

Boring Completed: 02-08-2022

Drill Rig: CME 55

Driller: Terracon ABQ

Project No.: 66215271

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL_66215271 NMERB OFFICE BUIL.GPJ TERRACON_DATATEMPLATE.GDT 3/28/22

BORING LOG NO. P-02

PROJECT: NMERB Office Building

CLIENT: Dekker/Perich/Sabatini, Ltd.
Albuquerque, New Mexico

SITE: Los Soleras Drive and Promenade Boulevard
Santa Fe, New Mexico

| MODEL LAYER | GRAPHIC LOG | LOCATION <small>See Exploration Plan</small> Latitude: 35.6201° Longitude: -106.0251° Approximate Surface Elev.: 6453 (Ft.) +/- DEPTH ELEVATION (Ft.) | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | FIELD TEST RESULTS | SWELL (%) | WATER CONTENT (%) | DRY UNIT WEIGHT (pcf) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES | |
|-------------|-------------|---|-------------|--------------------------|-------------|--------------------|-----------|-------------------|-----------------------|----------------------------------|---------------|--|
| 1 | | CLAYEY SAND (SC) , trace gravel, brown, medium dense 4.5 6448.5+/- | 5 | X | | 9-12-14 N=26 | | 8.4 | | 28-15-13 | 42 | |
| | | SILTY SAND WITH GRAVEL (SM) , brown, medium dense 6.0 6447+/- | | | X | 15-25 | | 6.2 | 124 | | | |
| | | Boring Terminated at 6 Feet | | | | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
7" Hollow Stem Auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

Elevations measured in the field

WATER LEVEL OBSERVATIONS

Groundwater not encountered



Boring Started: 02-08-2022

Boring Completed: 02-08-2022

Drill Rig: CME 55

Driller: Terracon ABQ

Project No.: 66215271

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL_66215271 NMERB OFFICE BUIL.GPJ TERRACON_DATATEMPLATE.GDT 3/28/22

BORING LOG NO. P-03

PROJECT: NMERB Office Building

CLIENT: Dekker/Perich/Sabatini, Ltd.
Albuquerque, New Mexico

SITE: Los Soleras Drive and Promenade Boulevard
Santa Fe, New Mexico

| MODEL LAYER | GRAPHIC LOG | LOCATION <small>See Exploration Plan</small> Latitude: 35.6200° Longitude: -106.0246° Approximate Surface Elev.: 6453 (Ft.) +/- DEPTH ELEVATION (Ft.) | DEPTH (Ft.) | WATER LEVEL OBSERVATIONS | SAMPLE TYPE | FIELD TEST RESULTS | SWELL (%) | WATER CONTENT (%) | DRY UNIT WEIGHT (pcf) | ATTERBERG LIMITS LL-PL-PI | PERCENT FINES |
|-------------|-------------|---|-------------|--------------------------|-------------|--------------------|-----------|-------------------|-----------------------|----------------------------------|---------------|
| 1 | | SILTY SAND (SM) , trace gravel, brown, medium dense to dense | 5 | | X | 17-20-18 N=38 | | 4.3 | | NP | 30 |
| | | | | | X | 20-15 | | 1.8 | 106 | | |
| | | Boring Terminated at 6 Feet | | | | | | | | | |

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
7" Hollow Stem Auger

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

Elevations measured in the field

WATER LEVEL OBSERVATIONS

Groundwater not encountered



6805 Academy Pkwy West NE
Albuquerque, NM

Boring Started: 02-08-2022

Boring Completed: 02-08-2022

Drill Rig: CME 55

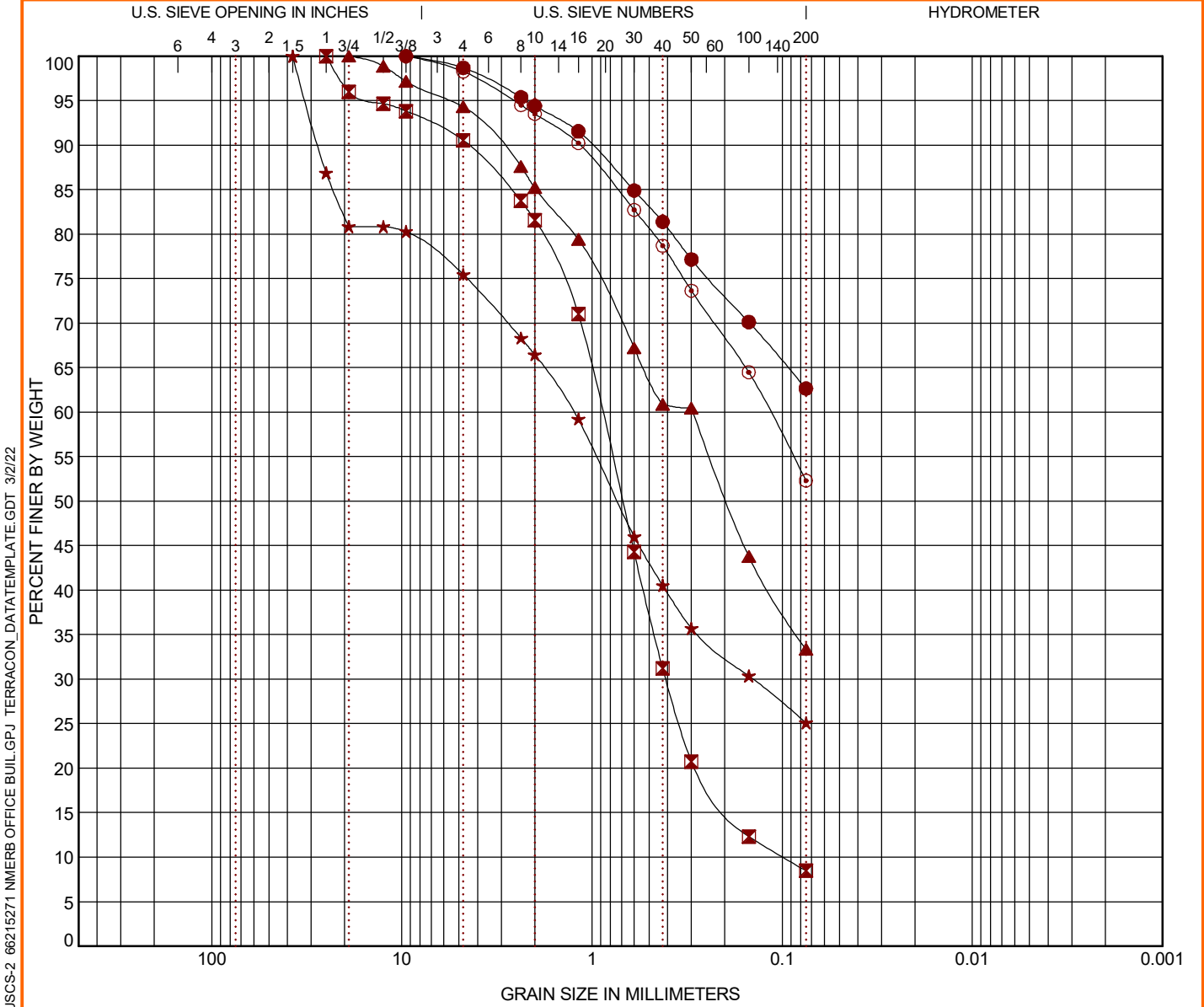
Driller: Terracon ABQ

Project No.: 66215271

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL_66215271 NMERB OFFICE BUIL.GPJ TERRACON_DATATEMPLATE.GDT 3/28/22

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---------|--------|------|--------|--------|------|--------------|
| | coarse | fine | coarse | medium | fine | |

| Boring ID | Depth (Ft) | USCS Classification | WC (%) | LL | PL | PI | Cc | Cu |
|-----------|------------|------------------------------------|--------|----|----|----|------|------|
| ● B-01 | 5 - 5.7 | SANDY LEAN CLAY (CL) | 11.9 | 29 | 16 | 13 | | |
| ☒ B-02 | 10 - 11.5 | WELL-GRADED SAND with SILT (SW-SM) | 1.6 | NP | NP | NP | 1.89 | 9.04 |
| ▲ B-03 | 2.5 - 4 | SILTY SAND (SM) | 7.2 | NP | NP | NP | | |
| ★ B-04 | 5 - 6.5 | CLAYEY SAND with GRAVEL (SC) | 6.1 | 30 | 14 | 16 | | |
| ⊙ P-01 | 2.5 - 3.5 | SANDY LEAN CLAY (CL) | 9.1 | 30 | 16 | 14 | | |

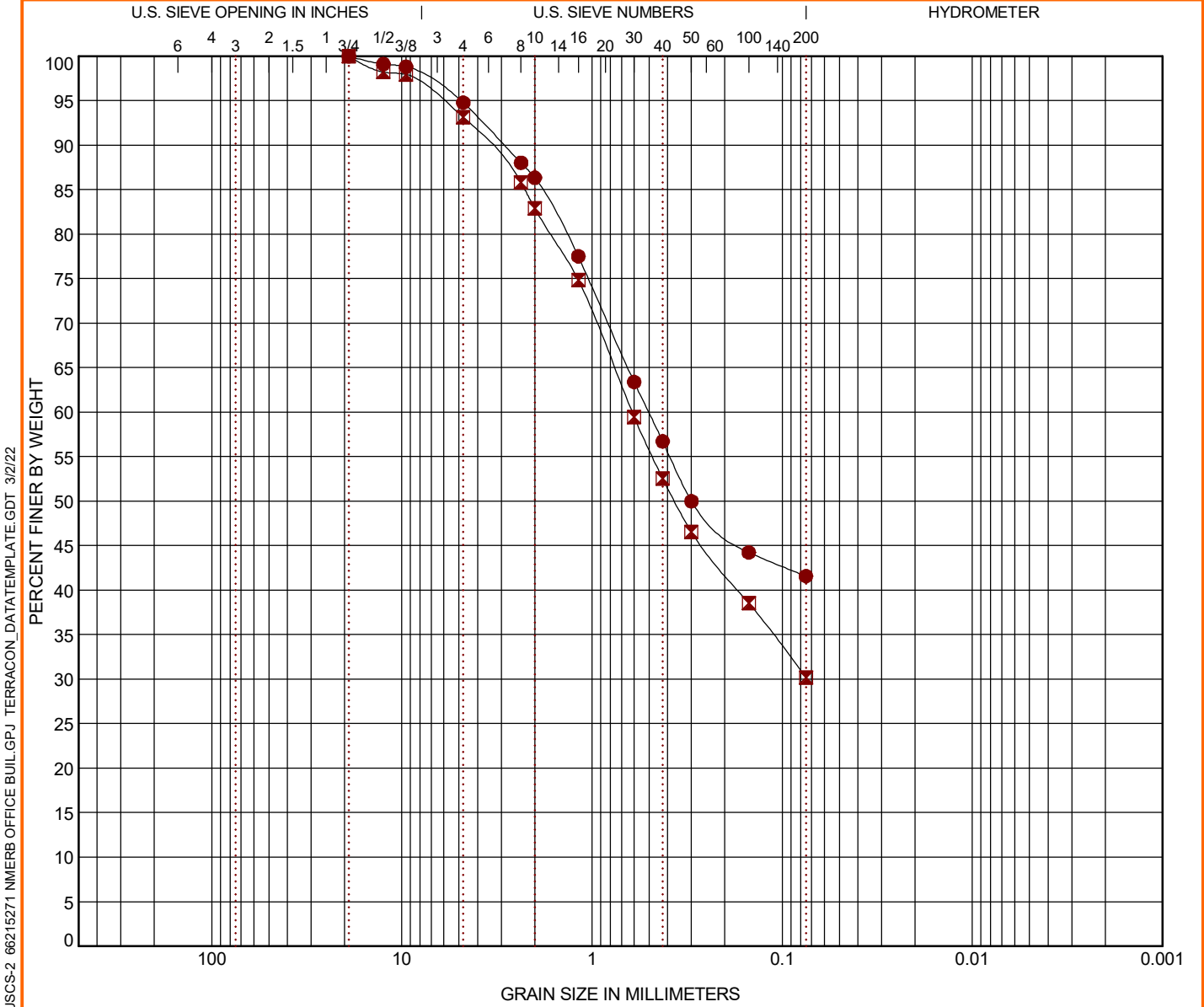
| Boring ID | Depth (Ft) | D ₁₀₀ | D ₆₀ | D ₃₀ | D ₁₀ | %Cobbles | %Gravel | %Sand | %Silt | %Fines | %Clay |
|-----------|------------|------------------|-----------------|-----------------|-----------------|----------|---------|-------|-------|--------|-------|
| ● B-01 | 5 - 5.7 | 9.5 | | | | 0.0 | 1.3 | 36.0 | | 62.7 | |
| ☒ B-02 | 10 - 11.5 | 25 | 0.892 | 0.408 | 0.099 | 0.0 | 9.4 | 82.1 | | 8.5 | |
| ▲ B-03 | 2.5 - 4 | 19 | 0.294 | | | 0.0 | 5.7 | 61.0 | | 33.3 | |
| ★ B-04 | 5 - 6.5 | 37.5 | 1.247 | 0.143 | | 0.0 | 24.5 | 50.4 | | 25.1 | |
| ⊙ P-01 | 2.5 - 3.5 | 9.5 | 0.116 | | | 0.0 | 1.7 | 46.0 | | 52.3 | |

| | | |
|---|--|---|
| PROJECT: NMERB Office Building SITE: Los Soleras Drive and Promenade Boulevard Santa Fe, New Mexico | <p style="font-size: 0.8em; color: #800000;">6805 Academy Pkwy West NE Albuquerque, NM</p> | PROJECT NUMBER: 66215271 CLIENT: Dekker/Perich/Sabatini, Ltd. Albuquerque, New Mexico |
|---|--|---|

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 66215271 NMERB OFFICE BUIL.GPJ TERRACON_DATA_TEMPLATE.GDT 3/2/22

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



| COBBLES | GRAVEL | | SAND | | | SILT OR CLAY |
|---------|--------|------|--------|--------|------|--------------|
| | coarse | fine | coarse | medium | fine | |

| Boring ID | Depth (Ft) | USCS Classification | WC (%) | LL | PL | PI | Cc | Cu |
|-----------|------------|---------------------|--------|----|----|----|----|----|
| ● P-02 | 2.5 - 4 | CLAYEY SAND (SC) | 8.4 | 28 | 15 | 13 | | |
| ☒ P-03 | 2.5 - 4 | SILTY SAND (SM) | 4.3 | NP | NP | NP | | |

| Boring ID | Depth (Ft) | D ₁₀₀ | D ₆₀ | D ₃₀ | D ₁₀ | %Cobbles | %Gravel | %Sand | %Silt | %Fines | %Clay |
|-----------|------------|------------------|-----------------|-----------------|-----------------|----------|---------|-------|-------|--------|-------|
| ● P-02 | 2.5 - 4 | 19 | 0.504 | | | 0.0 | 5.2 | 53.2 | | 41.6 | |
| ☒ P-03 | 2.5 - 4 | 19 | 0.614 | | | 0.0 | 6.9 | 62.9 | | 30.2 | |

| | | |
|--|--|---|
| PROJECT: NMERB Office Building | 6805 Academy Pkwy West NE Albuquerque, NM | PROJECT NUMBER: 66215271 |
| SITE: Los Soleras Drive and Promenade Boulevard Santa Fe, New Mexico | | CLIENT: Dekker/Perich/Sabatini, Ltd. Albuquerque, New Mexico |

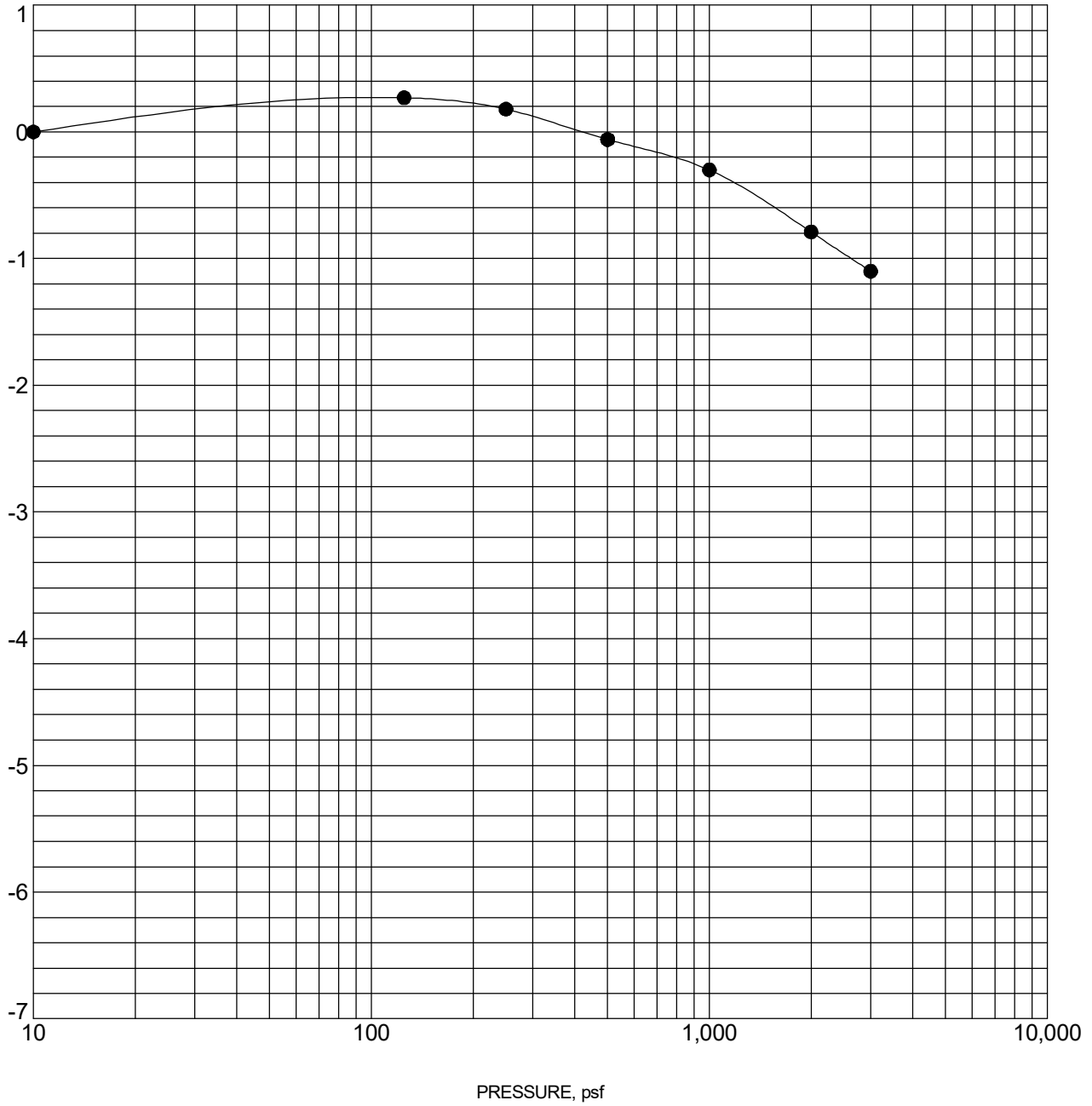
LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 66215271 NMERB OFFICE BUIL.GPJ TERRACON_DATA_TEMPLATE.GDT 3/2/22

SWELL CONSOLIDATION TEST

ASTM D4546

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS 66215271 NMERB OFFICE BUIL.GPJ TERRACON_DATATEMPLATE.GDT 3/28/22

AXIAL STRAIN, %



| Specimen Identification | Classification | γ_d , pcf | WC, % |
|-------------------------|---------------------|------------------|-------|
| ● B-01 5 - 5.67 ft | SANDY LEAN CLAY(CL) | 123 | 11.9 |

NOTES: Sample inundated with water at 500 pounds per square foot (psf).

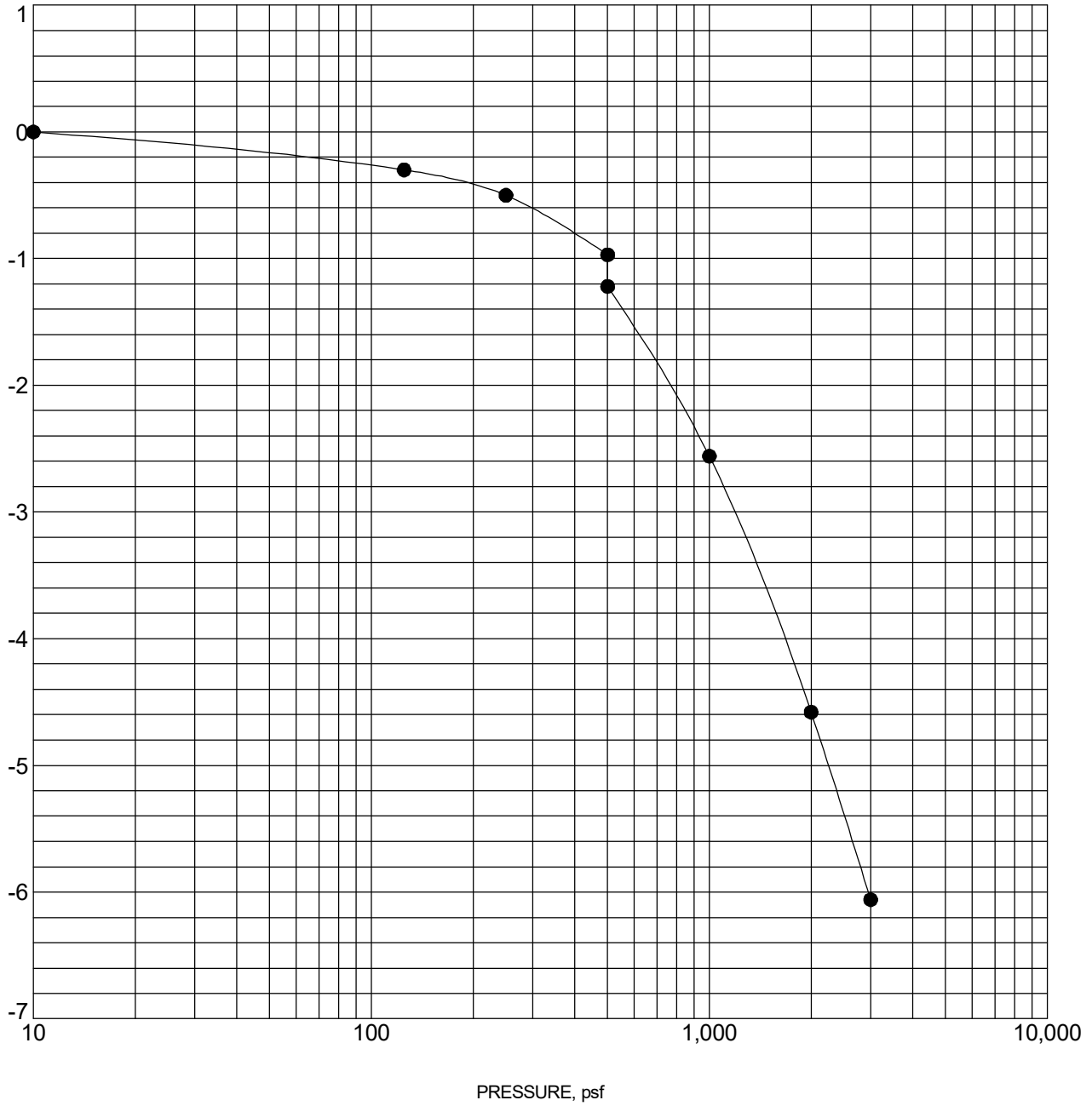
| | | |
|--|--|---|
| PROJECT: NMERB Office Building | <small>6805 Academy Pkwy West NE Albuquerque, NM</small> | PROJECT NUMBER: 66215271 |
| SITE: Los Soleras Drive and Promenade Boulevard Santa Fe, New Mexico | | CLIENT: Dekker/Perich/Sabatini, Ltd. Albuquerque, New Mexico |

SWELL CONSOLIDATION TEST

ASTM D4546

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS 66215271 NMERB OFFICE BUIL.GPJ TERRACON_DATATEMPLATE.GDT 3/28/22

AXIAL STRAIN, %



| Specimen Identification | Classification | γ_d , pcf | WC, % |
|-------------------------|-----------------------------------|------------------|-------|
| ● B-02 2.5 - 2.99 ft | WELL GRADED SAND with SILT(SW-SM) | 116 | 7.2 |

NOTES: Sample inundated with water at 500 pounds per square foot (psf).

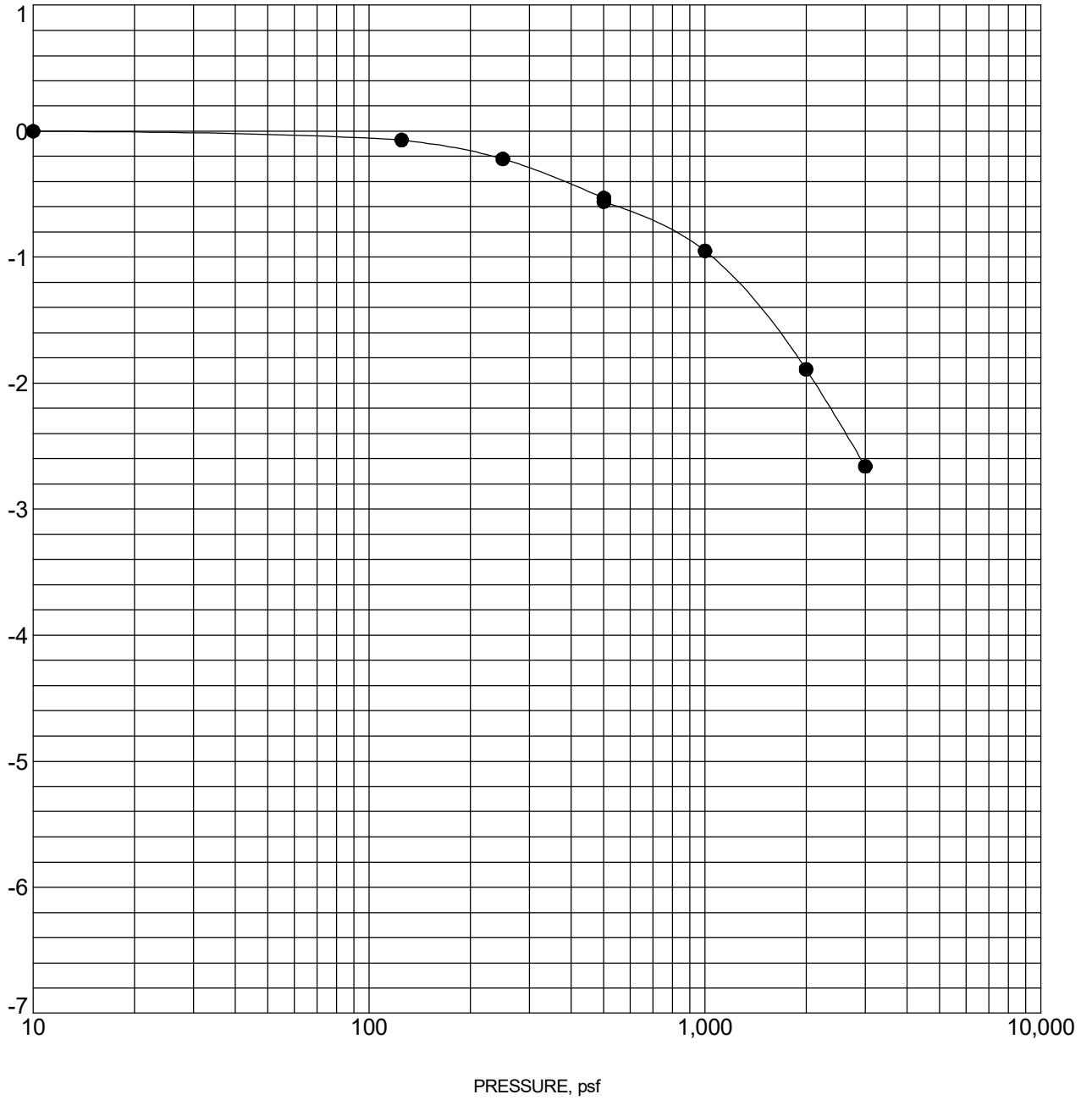
| | | |
|---|---|---|
| PROJECT: NMERB Office Building | <p style="font-size: 0.8em; color: #800000; margin-top: 5px;">6805 Academy Pkwy West NE Albuquerque, NM</p> | PROJECT NUMBER: 66215271 |
| SITE: Los Soleras Drive and Promenade Boulevard Santa Fe, New Mexico | | CLIENT: Dekker/Perich/Sabatini, Ltd. Albuquerque, New Mexico |

SWELL CONSOLIDATION TEST

ASTM D4546

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS 66215271 NMERB OFFICE BUIL.GPJ TERRACON_DATATEMPLATE.GDT 3/28/22

AXIAL STRAIN, %



| Specimen Identification | Classification | γ_d , pcf | WC, % |
|-------------------------|----------------|------------------|-------|
| ● B-03 5 - 5.67 ft | SILTY SAND(SM) | 115 | 7.0 |

NOTES: Sample inundated with water at 500 pounds per square foot (psf).

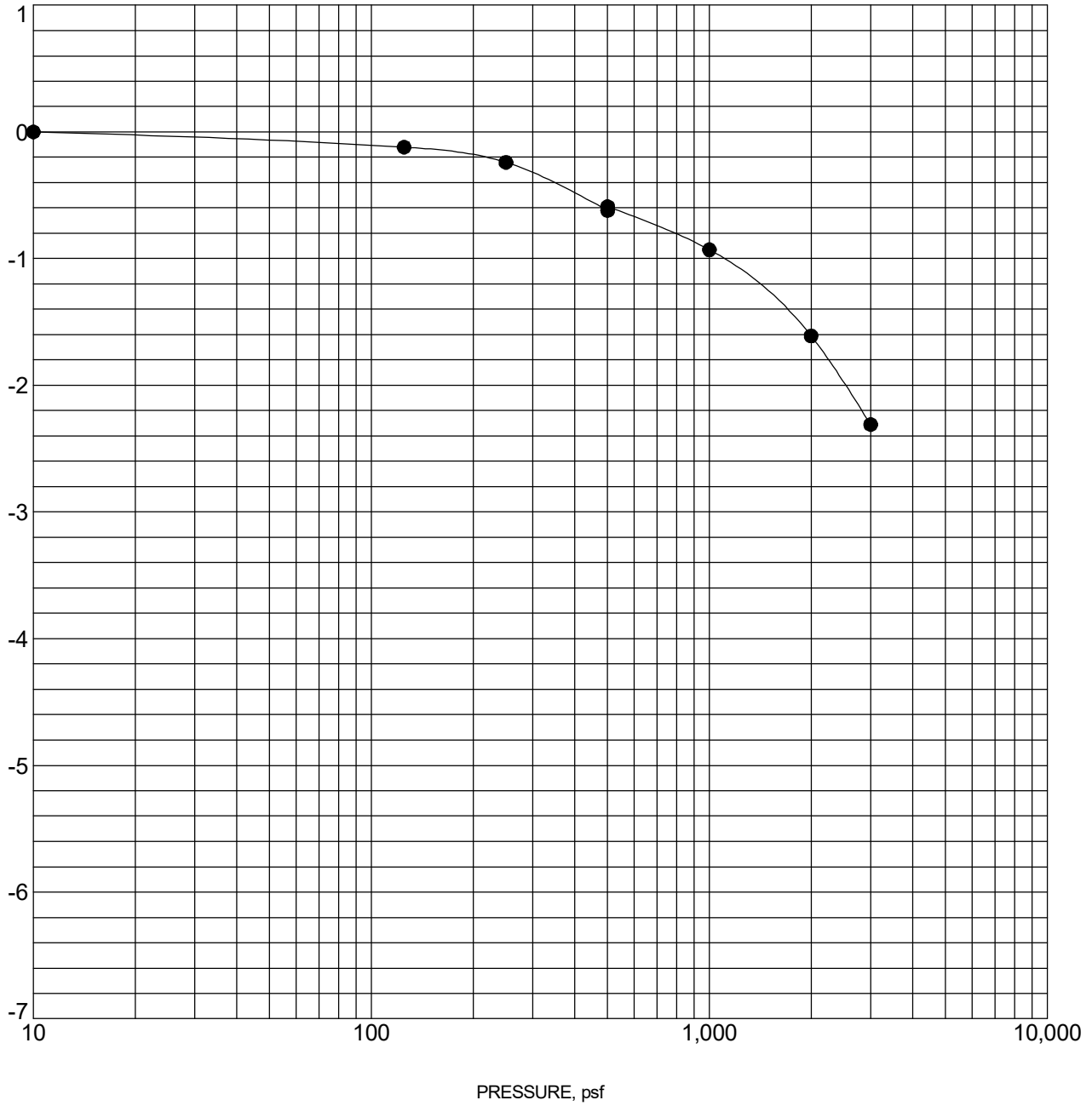
| | | |
|---|--|---|
| PROJECT: NMERB Office Building | <small>6805 Academy Pkwy West NE Albuquerque, NM</small> | PROJECT NUMBER: 66215271 |
| SITE: Los Soleras Drive and Promenade Boulevard Santa Fe, New Mexico | | CLIENT: Dekker/Perich/Sabatini, Ltd. Albuquerque, New Mexico |

SWELL CONSOLIDATION TEST

ASTM D4546

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. TC_CONSOL_STRAIN-USCS 66215271 NMERB OFFICE BUIL.GPJ TERRACON_DATATEMPLATE.GDT 3/28/22

AXIAL STRAIN, %



| Specimen Identification | Classification | γ_d , pcf | WC, % |
|-------------------------|-----------------------------|------------------|-------|
| ● B-04 2.5 - 3.42 ft | CLAYEY SAND with GRAVEL(SC) | 120 | 3.6 |

NOTES: Sample inundated with water at 500 pounds per square foot (psf).

| | | |
|--|--|---|
| PROJECT: NMERB Office Building | <small>6805 Academy Pkwy West NE Albuquerque, NM</small> | PROJECT NUMBER: 66215271 |
| SITE: Los Soleras Drive and Promenade Boulevard Santa Fe, New Mexico | | CLIENT: Dekker/Perich/Sabatini, Ltd. Albuquerque, New Mexico |

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 2202556

Date Reported: 2/18/2022

CLIENT: Terracon

Client Sample ID: B-01 @ 2.5

Project: NEMERB Office Bldg

Collection Date: 2/10/2022

Lab ID: 2202556-001

Matrix: SOIL

Received Date: 2/10/2022 4:30:00 PM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---------------------------------|--------|-----|------|-------|----|----------------------|--------------|
| EPA METHOD 300.0: ANIONS | | | | | | | Analyst: JMT |
| Sulfate | 57 | 7.5 | | mg/Kg | 5 | 2/15/2022 5:55:39 PM | 65566 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

| | | | | |
|--------------------|-----|--|----|---|
| Qualifiers: | * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| | D | Sample Diluted Due to Matrix | E | Estimated value |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| | ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| | PQL | Practical Quantitative Limit | RL | Reporting Limit |
| | S | % Recovery outside of range due to dilution or matrix interference | | |

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 2202556

Date Reported: 2/18/2022

CLIENT: Terracon

Client Sample ID: B-04 @ 5'

Project: NEMERB Office Bldg

Collection Date: 2/10/2022

Lab ID: 2202556-002

Matrix: SOIL

Received Date: 2/10/2022 4:30:00 PM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed | Batch |
|---------------------------------|--------|-----|------|-------|----|----------------------|--------------|
| EPA METHOD 300.0: ANIONS | | | | | | | Analyst: JMT |
| Sulfate | 190 | 7.5 | | mg/Kg | 5 | 2/15/2022 6:20:28 PM | 65566 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

| | | | | |
|--------------------|-----|--|----|---|
| Qualifiers: | * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| | D | Sample Diluted Due to Matrix | E | Estimated value |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| | ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| | PQL | Practical Quantitative Limit | RL | Reporting Limit |
| | S | % Recovery outside of range due to dilution or matrix interference | | |

SUMMARY OF LABORATORY RESULTS

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. SOIL PROPERTIES 2 66215271 NMERB OFFICE BUIL.GPJ TERRACON_DATATEMPLATE.GDT 3/28/22

| Borehole No. | Depth (ft.) | USCS Soil Class. | In-Situ Properties | | Classification | | | Swell/Consolidation Testing | | Corrosivity | | | | Remarks | |
|--------------|-------------|------------------|--------------------|-------------------|------------------------|------------------|----|-----------------------------|-----------------|-------------------|----|----------------------|----------------|---------|-----------------|
| | | | Dry Density (pcf) | Water Content (%) | Passing #200 Sieve (%) | Atterberg Limits | | | Swell (%) | Consolidation (%) | pH | Resistivity (ohm-cm) | Sulfates (ppm) | | Chlorides (ppm) |
| | | | | | | LL | PL | PI | | | | | | | |
| B-01 | 2.5 - 4.0 | SM | | 7 | | | | | | | | 57 | | 2 | |
| B-01 | 5.0 - 5.7 | CL | 123 | 12 | 63 | 29 | 16 | 13 | 0.00 at 500 psf | | | | | 1 | |
| B-01 | 10.0 - 11.5 | SW-SM | | 1 | | | | | | | | | | 2 | |
| B-01 | 15.0 - 16.5 | SW-SM | | 1 | | | | | | | | | | 2 | |
| B-01 | 20.0 - 21.5 | CL-ML | | 8 | | | | | | | | | | 2 | |
| B-01 | 25.0 - 26.5 | SW-SM | | 3 | | | | | | | | | | 2 | |
| B-02 | 2.5 - 3.0 | SW-SM | 116 | 7 | | | | | 0.25 at 500 psf | | | | | 1, 2 | |
| B-02 | 5.0 - 6.5 | SW-SM | | 3 | | | | | | | | | | 2 | |
| B-02 | 10.0 - 11.5 | SW-SM | | 2 | 8 | NP | NP | NP | | | | | | | |
| B-02 | 15.0 - 16.5 | CL-ML | | 10 | | | | | | | | | | 2 | |
| B-02 | 20.0 - 21.3 | SW-SM | | 2 | | | | | | | | | | 2 | |
| B-03 | 2.5 - 4.0 | SM | | 7 | 33 | NP | NP | NP | | | | | | | |
| B-03 | 5.0 - 5.7 | SM | 115 | 7 | | | | | 0.03 at 500 psf | | | | | 1, 2 | |
| B-03 | 11.5 - 12.0 | SM | | 7 | | | | | | | | | | 2 | |
| B-03 | 15.0 - 16.5 | SW-SM | | 2 | | | | | | | | | | 2 | |
| B-03 | 20.0 - 20.9 | SW-SM | | 2 | | | | | | | | | | 2 | |
| B-04 | 2.5 - 3.4 | SC | 120 | 4 | | | | | 0.03 at 500 psf | | | | | 1, 2 | |
| B-04 | 5.0 - 6.5 | SC | | 6 | 25 | 30 | 14 | 16 | | | | 190 | | | |
| B-04 | 10.0 - 11.5 | SM | | 2 | | | | | | | | | | 2 | |
| B-04 | 15.0 - 16.5 | SM | | 5 | | | | | | | | | | 2 | |
| B-04 | 20.0 - 21.5 | SW-SM | | 2 | | | | | | | | | | 2 | |
| P-01 | 2.5 - 3.5 | CL | 111 | 9 | 52 | 30 | 16 | 14 | | | | | | 1 | |
| P-01 | 5.0 - 6.5 | CL | | 8 | | | | | | | | | | 2 | |
| P-02 | 2.5 - 4.0 | SC | | 8 | 42 | 28 | 15 | 13 | | | | | | | |
| P-02 | 5.0 - 6.0 | SM | 124 | 6 | | | | | | | | | | 1, 2 | |

REMARKS

1. Dry Density and/or moisture determined from one or more rings of a multi-ring sample.
2. Visual Classification.
3. Submerged to approximate saturation.
4. Expansion Index in accordance with ASTM D4829-95.
5. Air-Dried Sample

| | | |
|---|--|---|
| PROJECT: NMERB Office Building |  6805 Academy Pkwy West NE Albuquerque, NM | PROJECT NUMBER: 66215271 |
| SITE: Los Soleras Drive and Promenade Boulevard Santa Fe, New Mexico | | CLIENT: Dekker/Perich/Sabatini, Ltd. Albuquerque, New Mexico |
| | PH. 505-797-4287 FAX. 505-797-4288 | |

SUMMARY OF LABORATORY RESULTS

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. SOIL PROPERTIES 2 66215271 NMERB OFFICE BUIL.GPJ TERRACON_DATATEMPLATE.GDT 3/28/22

| Borehole No. | Depth (ft.) | USCS Soil Class. | In-Situ Properties | | Classification | | | Swell/Consolidation Testing | | Corrosivity | | | | Remarks | |
|--------------|-------------|------------------|--------------------|-------------------|------------------------|------------------|----|-----------------------------|-----------|-------------------|----|----------------------|----------------|---------|-----------------|
| | | | Dry Density (pcf) | Water Content (%) | Passing #200 Sieve (%) | Atterberg Limits | | | Swell (%) | Consolidation (%) | pH | Resistivity (ohm-cm) | Sulfates (ppm) | | Chlorides (ppm) |
| | | | | | | LL | PL | PI | | | | | | | |
| P-03 | 2.5 - 4.0 | SM | | 4 | 30 | NP | NP | NP | | | | | | | |
| P-03 | 5.0 - 6.0 | SM | 106 | 2 | | | | | | | | | | | 1, 2 |

REMARKS

1. Dry Density and/or moisture determined from one or more rings of a multi-ring sample.
2. Visual Classification.
3. Submerged to approximate saturation.
4. Expansion Index in accordance with ASTM D4829-95.
5. Air-Dried Sample

| | | |
|---|--|---|
| PROJECT: NMERB Office Building |  6805 Academy Pkwy West NE Albuquerque, NM | PROJECT NUMBER: 66215271 |
| SITE: Los Soleras Drive and Promenade Boulevard Santa Fe, New Mexico | | CLIENT: Dekker/Perich/Sabatini, Ltd. Albuquerque, New Mexico |
| | PH. 505-797-4287 FAX. 505-797-4288 | |



February 11, 2022

Terracon Consultants Inc.
6805 Academy Parkway West NE
Albuquerque, New Mexico 87109

Attention: Mr. Michael E. Anderson, M.B.A., P.E.

RE: Shear Wave Velocity Profile

**NMERB New Office Building
Las Soleras Drive, East of Cerrillos Rd
Santa Fe, New Mexico
Terracon Project No. 66215271
Geolines Project No. NM-220003**

Dear Mr. Anderson:

This letter report presents the results of our refraction microtremor measurements and analysis for the referenced project. The purpose of our services was to provide a calculated average shear wave velocity of subsurface materials at the NMERB New Office Building site to a depth of 30 meters (100 feet). This information was used to establish a recommended Site Class in accordance with the 2015 International Building Code (IBC).

Fieldwork

The scope of our services for this project included measurement of surface waves on February 10, 2022, with one geophone array using standard p-wave geophones. Ambient noise/refraction microtremor data was recorded using a geophone spacing of ten meters with 12 channels. Sampling was performed at a two-millisecond rate for 30 second periods.

The approximate location of the array is shown on Plate 1, Site Map. The array was located in the field by measuring from existing natural and cultural features. The location of the array is accurate only to the degree implied by the methods used.

Data reduction and results

The one-dimensional shear wave velocity profile and average shear wave velocity to 100 feet depth were modeled for each array data set using Optim Software's SeisOpt® ReMi™v4.0 software. The field data were reduced and processed by the software to produce a velocity spectrum by slowness-frequency (p-f) transformation of the records.

GEOLINES, LLC

P.O. BOX 52065 • ALBUQUERQUE, NM • 87181-2065

PHONE: (505)332-2114

Using the processed data, the software produces a p-f image and the normal-mode dispersion trend is identified. Frequency-velocity pairs comprising the dispersion curve are picked at the lower bounds of the trend of the high spectral ratio band identified in the p-f image. The p-f image and dispersion modeling picks for the array measurements are shown on Plate 2, Dispersion Curve and p-f Image. The dispersion curve modeling picks obtained from the p-f image were then used to develop a calculated dispersion curve and a one-dimensional shear wave velocity model for the site. Frequency-velocity picks and calculated dispersion curve fits are shown on Plate 2, Dispersion Curve and p-f Image. The shear wave velocity profile for the array is presented in Plate 3, Shear Wave Velocity Model.

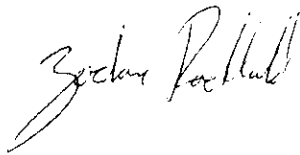
Recommendations

The calculated average shear wave velocity for 100 feet depth at the geophone array is 1366 feet per second (f/s). Based on this finding, a Site Class C as presented in the 2015 IBC is appropriate.

Closure

Professional services for this project were performed using that degree of care and skill ordinarily exercised under similar circumstances by reputable geotechnical engineers practicing in this or similar localities. No warranties, express or implied, are intended or made.

Respectfully Submitted:



**Zachary J. Rockhold
Project Manager**

Reviewed By:



**Otto C. Holmquist, PE
Principal Engineer**



02/11/2022

NMERB New Office Building Site Class

Geolines Project No. NM-220003
Terracon Project No. 66215271



Approximate Array Location

North
*Not to Scale

Google Earth
Image Landsat / Copernicus

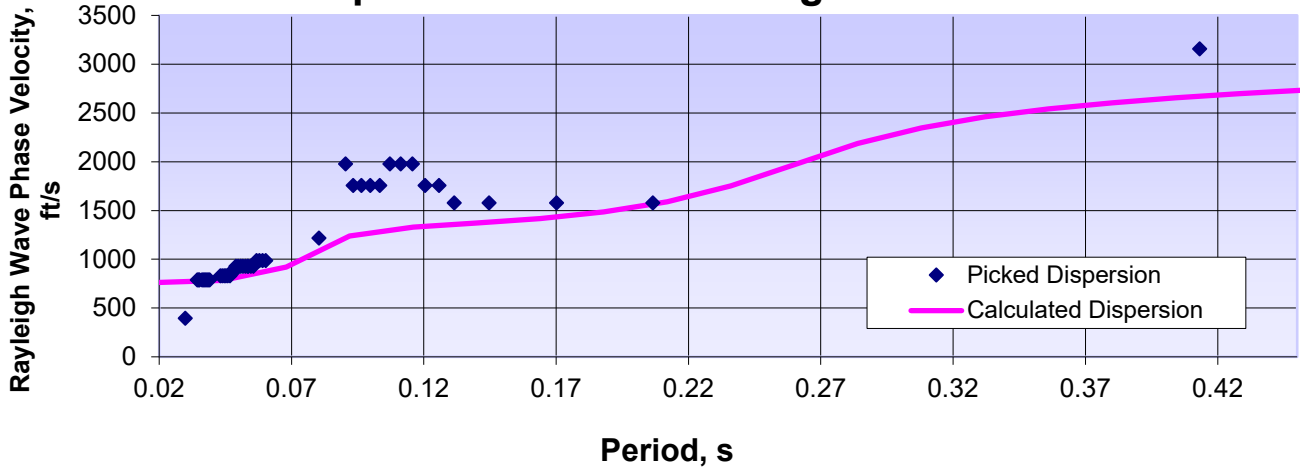
GEOLINES
Terracon Project NO. 66215271

Terracon Consultants Inc.

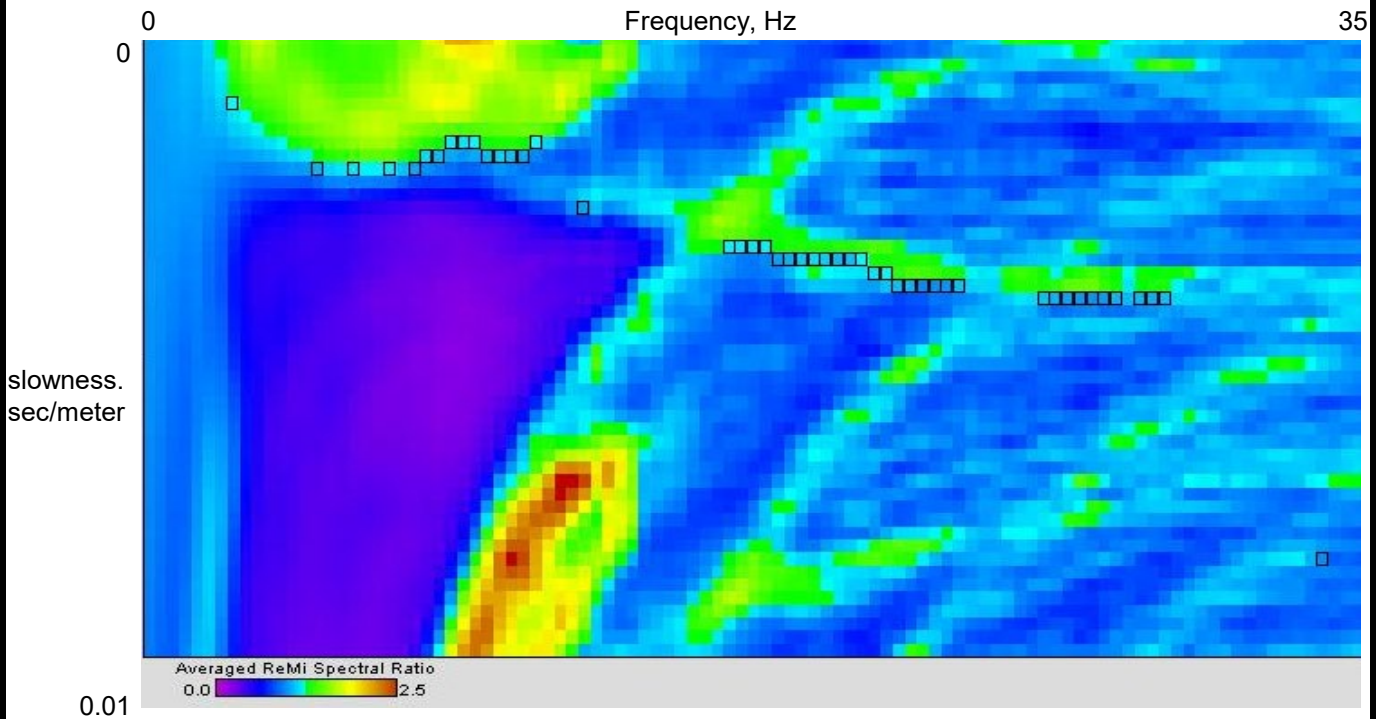
NMERB New Office Building
Las Soleras Drive, East of Cerrillos Rd
Santa Fe, New Mexico


| SITE MAP | |
|--------------|-----------|
| PROJECT NO.: | PLATE NO. |
| NM-220003 | 1 |

Dispersion Curve Showing Picks and Fit

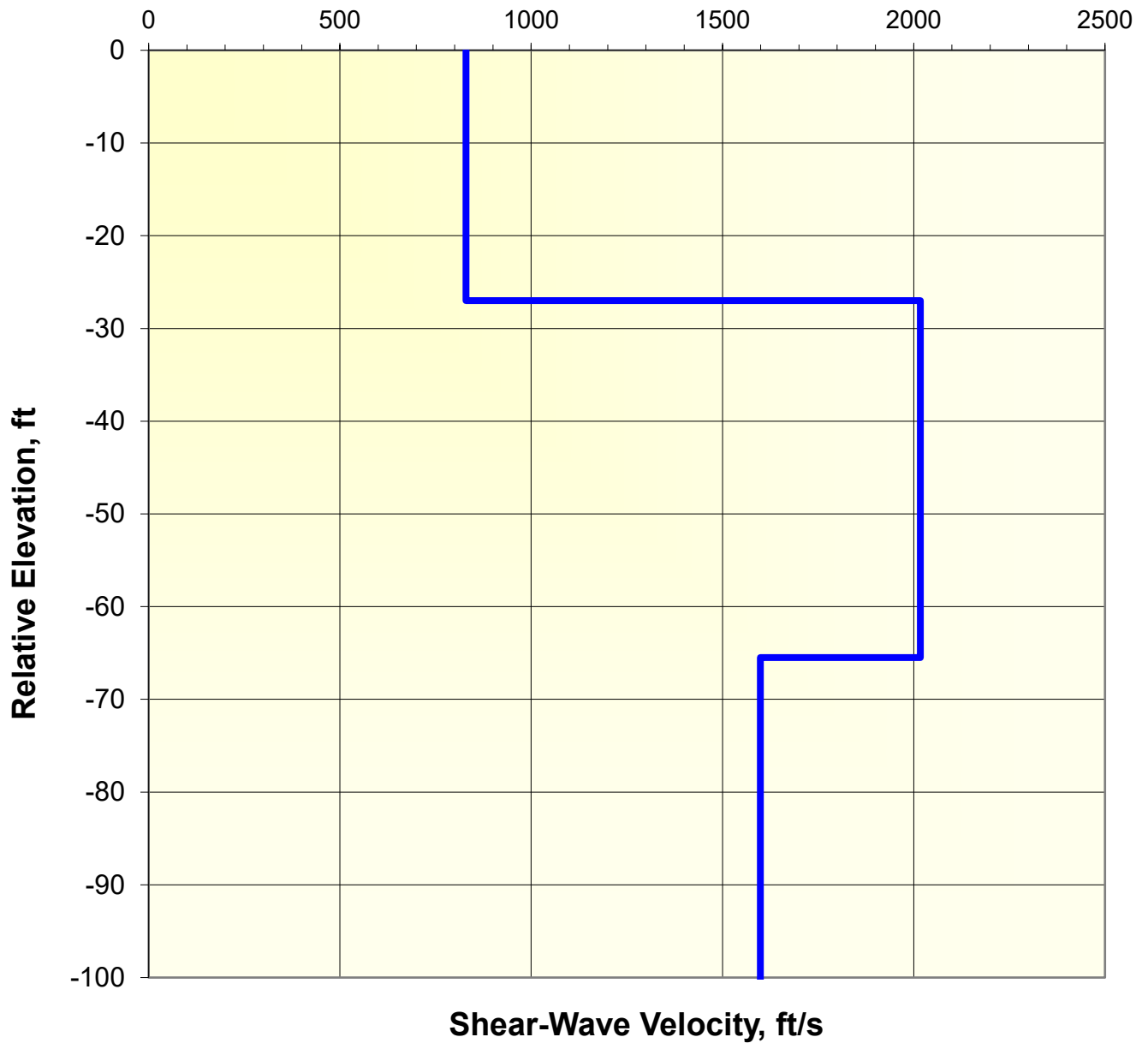


p-f Image and Dispersion Picks




| | | | | |
|---|--|--|---|-----------|
|  | Terracon Consultants Inc. | | Dispersion Curve and p-f Image | |
| | NMERB New Office Building Las Soleras Drive, East of Cerrillos Rd Santa Fe, New Mexico | | PROJECT NO.: | PLATE NO. |
| | | | NM-220003 | 2 |

1-D Shear-Wave Velocity Profile



* The modeling methods used to calculate shear wave velocities do not necessarily have unique solutions, therefore velocities and depth to changes in velocities should be considered approximate.

| | | | | |
|---|--|--|----------------------------------|-----------|
|  | Terracon Consultants Inc. | | SHEAR WAVE VELOCITY MODEL | |
| | NMERB New Office Building Las Soleras Drive, East of Cerrillos Rd Santa Fe, New Mexico | | PROJECT NO.: | PLATE NO. |
| | | | NM-220003 | 3 |

SUPPORTING INFORMATION

Contents:













General Notes

Unified Soil Classification System

Note: All attachments are one page unless noted above.

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

| | | | | | | | | |
|-----------------|---|---|---|--------------------|---|---|--------------------|--|
| SAMPLING |  |  |  | WATER LEVEL |  | Water Initially Encountered | FIELD TESTS | (HP) Hand Penetrometer |
| |  |  |  | |  | Water Level After a Specified Period of Time | | (T) Torvane |
| |  |  |  | |  | Water Level After a Specified Period of Time | | (b/f) Standard Penetration Test (blows per foot) |
| | Auger | Shelby Tube | Split Spoon | | | Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations. | | (OVA) Organic Vapor Analyzer |

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

| STRENGTH TERMS | RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels, sands and silts. | | | CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance | | | |
|-----------------------|--|---|------------------------|--|--|---|------------------------|
| | Descriptive Term (Density) | Standard Penetration or N-Value Blows/Ft. | Ring Sampler Blows/Ft. | Descriptive Term (Consistency) | Unconfined Compressive Strength, Qu, psf | Standard Penetration or N-Value Blows/Ft. | Ring Sampler Blows/Ft. |
| | Very Loose | 0 - 3 | 0 - 6 | Very Soft | less than 500 | 0 - 1 | < 3 |
| | Loose | 4 - 9 | 7 - 18 | Soft | 500 to 1,000 | 2 - 4 | 3 - 4 |
| | Medium Dense | 10 - 29 | 19 - 58 | Medium-Stiff | 1,000 to 2,000 | 4 - 8 | 5 - 9 |
| | Dense | 30 - 50 | 59 - 98 | Stiff | 2,000 to 4,000 | 8 - 15 | 10 - 18 |
| | Very Dense | > 50 | ≥ 99 | Very Stiff | 4,000 to 8,000 | 15 - 30 | 19 - 42 |
| | | | | Hard | > 8,000 | > 30 | > 42 |

RELATIVE PROPORTIONS OF SAND AND GRAVEL

| Descriptive Term(s) of other constituents | Percent of Dry Weight |
|---|-----------------------|
| Trace | < 15 |
| With | 15 - 29 |
| Modifier | > 30 |

GRAIN SIZE TERMINOLOGY

| Major Component of Sample | Particle Size |
|---------------------------|--------------------------------------|
| Boulders | Over 12 in. (300 mm) |
| Cobbles | 12 in. to 3 in. (300mm to 75mm) |
| Gravel | 3 in. to #4 sieve (75mm to 4.75 mm) |
| Sand | #4 to #200 sieve (4.75mm to 0.075mm) |
| Silt or Clay | Passing #200 sieve (0.075mm) |

RELATIVE PROPORTIONS OF FINES

| Descriptive Term(s) of other constituents | Percent of Dry Weight |
|---|-----------------------|
| Trace | < 5 |
| With | 5 - 12 |
| Modifier | > 12 |

PLASTICITY DESCRIPTION

| Term | Plasticity Index |
|-------------|------------------|
| Non-plastic | 0 |
| Low | 1 - 10 |
| Medium | 11 - 30 |
| High | > 30 |

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

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

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

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

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

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

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

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

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

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

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

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

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

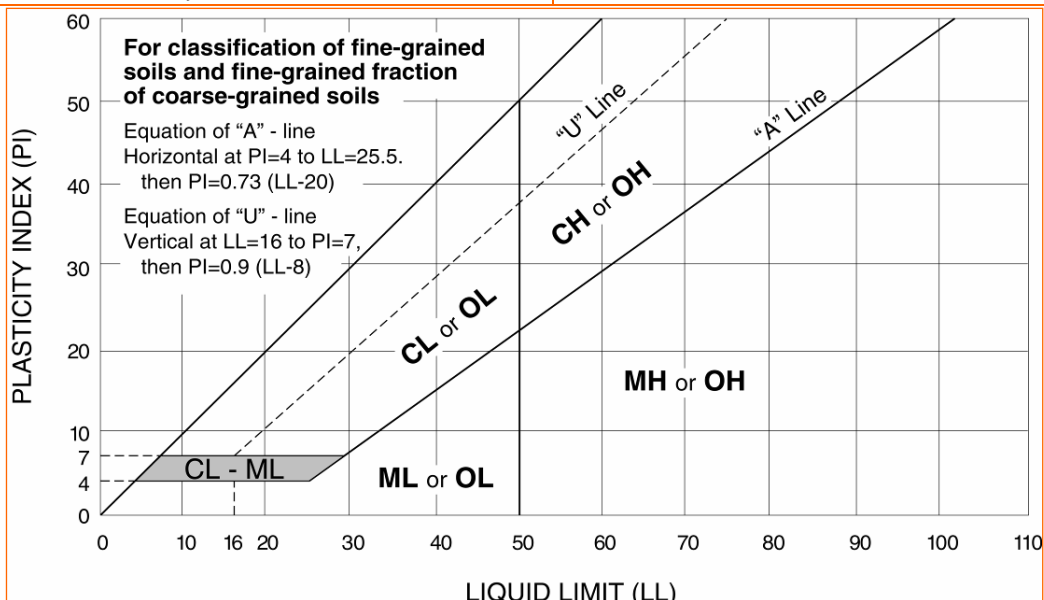
^M If soil contains $\geq 30\%$ plus No. 200, predominantly gravel, add "gravelly" to group name.

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

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

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

^Q PI plots below "A" line.



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Santa Fe, NM

SECTION 00 4325 - SUBSTITUTION REQUEST FORM - DURING PROCUREMENT

END OF SECTION



SUBSTITUTION REQUEST

(During the Bidding/Negotiating Stage)

Project: _____ Substitution Request Number: _____

From: _____

To: _____ Date: _____

A/E Project Number: _____

Re: _____ Contract For: _____

Specification Title: _____ Description: _____

Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____

Manufacturer: _____ Address: _____ Phone: _____

Trade Name: _____ Model No.: _____

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

Telephone: _____

A/E's REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by: _____

Date: _____

Supporting Data Attached: Drawings Product Data Samples Tests Reports _____

SECTION 00 5000 - CONTRACTING FORMS AND SUPPLEMENTS

PART 1 GENERAL

1.1 CONTRACTOR IS RESPONSIBLE FOR OBTAINING A VALID LICENSE TO USE ALL COPYRIGHTED DOCUMENTS SPECIFIED BUT NOT INCLUDED IN THE PROJECT MANUAL.

1.2 AGREEMENT AND CONDITIONS OF THE CONTRACT

- A. See Section 00 5200 - Agreement Form for the Agreement form to be executed.
- B. See Section 00 7200 - General Conditions for the General Conditions.
- C. The Agreement is based on AIA A101.
- D. The General Conditions are based on AIA A201.

1.3 FORMS

- A. Use the following forms for the specified purposes unless otherwise indicated elsewhere in Contract Documents.
- B. Post-Award Certificates and Other Forms:
 - 1. Submittal Transmittal Letter Form: AIA G810.
 - 2. Schedule of Values Form: AIA G703.
 - 3. Application for Payment Forms: AIA G702 with AIA G703 (for Contractors).
 - 4. Consent of Surety to Reduction of Retainage Form: AIA G707A.
- C. Clarification and Modification Forms:
 - 1. Substitution Request Form: CSI/CSC Form 1.5C (During the Bidding/Negotiating Stage).
 - 2. Substitution Request Form: CSI/CSC Form 13.1A (After the Bidding/Negotiating Stage).
 - 3. Architect's Supplemental Instructions Form: AIA G710.
 - 4. Construction Change Directive Form: AIA G714.
 - 5. Request for Proposal Form: AIA G709.
 - 6. Change Order Form: AIA G701.
- D. Closeout Forms:
 - 1. Certificate of Substantial Completion Form: AIA G704.
 - 2. Affidavit of Payment of Debts and Claims Form: AIA G706.

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3. Affidavit of Release of Liens Form: AIA G706A.
4. Consent of Surety to Final Payment Form: AIA G707 (Submit with final Application for Payment).

1.4 REFERENCE STANDARDS

- A. AIA A101 - Standard Form of Agreement Between Owner and Contractor where the basis of Payment is a Stipulated Sum; 2017.
- B. AIA A201 - General Conditions of the Contract for Construction; 2017.
- C. AIA G701 - Change Order; 2017.
- D. AIA G702 - Application and Certificate for Payment; 1992.
- E. AIA G703 - Continuation Sheet; 1992.
- F. AIA G704 - Certificate of Substantial Completion; 2017.
- G. AIA G710 - Architect's Supplemental Instructions; 2017.
- H. AIA G714 - Construction Change Directive; 2017.
- I. AIA G810 - Transmittal Letter; 2001.
- J. CSI/CSC Form 1.5C - Substitution Request (During the Bidding/Negotiating Stage); Current Edition.
- K. CSI/CSC Form 13.1A - Substitution Request (After the Bidding/Negotiating Phase); Current Edition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 00 5200 - AGREEMENT FORM

PART 1 GENERAL

1.1 FORM OF AGREEMENT

1.2 THE AGREEMENT TO BE EXECUTED IS ATTACHED FOLLOWING THIS PAGE.

1.3 RELATED REQUIREMENTS

- A. Section 00 7200 - General Conditions.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

NMERB New Office Building
Santa Fe, NM

SECTION 00 6325 - SUBSTITUTION REQUEST FORM - DURING CONSTRUCTION

END OF SECTION



SUBSTITUTION REQUEST

(After the Bidding/Negotiating Phase)

Project: _____ Substitution Request Number: _____

 From: _____
 To: _____ Date: _____

 A/E Project Number: _____
 Re: _____ Contract For: _____

Specification Title: _____ Description: _____
 Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____
 Manufacturer: _____ Address: _____ Phone: _____
 Trade Name: _____ Model No.: _____
 Installer: _____ Address: _____ Phone: _____

History: New product 1-4 years old 5-10 years old More than 10 years old

Differences between proposed substitution and specified product: _____

Point-by-point comparative data attached — REQUIRED BY A/E

Reason for not providing specified item: _____

Similar Installation:

Project: _____ Architect: _____
 Address: _____ Owner: _____
 _____ Date Installed: _____

Proposed substitution affects other parts of Work: No Yes; explain _____

Savings to Owner for accepting substitution: _____ (\$ _____).

Proposed substitution changes Contract Time: No Yes [Add] [Deduct] _____ days.

Supporting Data Attached: Drawings Product Data Samples Tests Reports _____

SECTION 00 7200 - GENERAL CONDITIONS

FORM OF GENERAL CONDITIONS

- 1.1 THE GENERAL CONDITIONS APPLICABLE TO THIS CONTRACT IS INCLUDED IN THE REQUEST FOR PROPOSALS, SECTION 00 1000, APPENDIX J, PART B.**

SUPPLEMENTARY CONDITIONS

- 2.1 REFER TO SECTION 00 1000 - REQUEST FOR PROPOSALS, APPENDIX J, PART C, SUPPLEMENTARY CONDITIONS OF THE CONSTRUCT**

END OF SECTION

NMERB New Office Building
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SECTION 00 7343 - WAGE RATE REQUIREMENTS

THE NEW MEXICO STATE MINIMUM WAGE RATES APPLICABLE FOR THIS CONTRACT, AS EVIDENCED BY THE ATTACHED DETERMINATION BY THE NEW MEXICO LABOR AND INDUSTRIAL COMMISSION, SHALL BE PAID TO ALL WORKERS EMPLOYED IN THE PERFORMANCE OF THE WORK.

SEE ARTICLE 15, SUPPLEMENTARY CONDITIONS.

WAGE RATE DETERMINATION IS ATTACHED FOLLOWING THIS PAGE

END OF SECTION



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: NMERB Headquarters Replacement
Requested Date: 03/27/2023
Approved Date: 03/28/2023
Approved Wage Decision Number: SF-23-0922-B

Wage Decision Expiration Date for Bids: 07/26/2023

2) Physical Location of Jobsite for Project:
Job Site Address: 5211 Las Soleras Drive
Job Site City: Santa Fe
Job Site County: Santa Fe

3) Contracting Agency Name (Department or Bureau): NM Educational Retirement Board
Contracting Agency Contact's Name: Megan Mannila
Contracting Agency Contact's Phone: (505) 476-6105 Ext.

4) Estimated Contract Award Date: 07/01/2023

5) Estimated total project cost: \$12,300,000.00
a. Are any federal funds involved?: No
b. Does this project involve a building?: Yes - This will be a newly constructed building, approximately 19,440 square feet, and will consolidate NMERB operations.
c. Is this part of a larger plan for construction on or appurtenant to the property that is subject to this project?: No
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?: This will be the new main NMERB Headquarters building in Santa Fe.

6) Classifications of Construction:

| Classification Type and Cost Total | Description |
|---|---|
| General Building (B) Cost: \$12,300,000.00 | New office building to be built. It will be a 19,443 square foot one-story building comprised of office space, support, and conference space. |



STATE OF NEW MEXICO
NEW MEXICO DEPARTMENT OF
WORKFORCE SOLUTIONS
Labor Relations Division
121 Tijeras Ave NE, Suite 3000
Albuquerque, NM 87102
www.dws.state.nm.us

PUBLIC WORKS PROJECT REQUIREMENTS

As a participant in a Public Works project valued at more than \$60,000 in the State of New Mexico, the following list addresses many of the responsibilities that are defined by statute or regulation to each project stakeholder.

Contracting Agency

- Ensure that all Contractors wishing to bid on a Public Works project when the project is \$60,000 or more are actively registered with the Public Works and Apprenticeship Application (PWAA) website: <http://www.dws.state.nm.us/pwaa> (Contractor Registration) prior to bidding.
- Please submit Notice of Award (NOA) and Subcontractor List(s) to the PWAA website promptly after the project is awarded.
- Please update the Subcontractor List(s) on the PWAA website whenever changes occur.
- All Sub-Contractors and tiers (excluding professional services) regardless of contract amount must be listed on the Subcontractor List and must adhere to the Public Works Minimum Wage Act.
- Ninety days after project completion please go into the PWAA system and close the project. Only Contracting Agencies are allowed to close the project. Agents or Contractors are not allowed to close projects.

General Contractor

- Provide a complete Subcontractor List and Statements of Intent (SOI) to Pay Prevailing Wages for all Contractors, regardless of amount of work, to the Contracting Agency within 3 (three) days of award.
- Ensure that all Subcontractors wishing to bid on a Public Works project have an active Contractor Registration with the Public Works and Apprenticeship Application (PWAA) website: <http://www.dws.state.nm.us/pwaa> prior to bidding when their bid will exceed \$60,000.
- Submit weekly certified payroll bi-weekly to the Contracting Agency.
- Make certain the Public Works Apprentice and Training Act contributions are paid either to an approved Apprenticeship Program or to the Public Works Apprentice and Training Fund.
- Confirm the Wage Rate poster, provided in PWAA, is displayed at the job site in an easily accessible place.
- Make sure, when a project has been completed, the Affidavits of Wages Paid (AWP) are sent to the Contracting Agency.



STATE OF NEW MEXICO
NEW MEXICO DEPARTMENT OF
WORKFORCE SOLUTIONS
Labor Relations Division
121 Tijeras Ave NE, Suite 3000
Albuquerque, NM 87102
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- All Subcontractors and tiers (excluding professional services) regardless of contract amount must be listed on the Subcontractor List and must adhere to the Public Works Minimum Wage Act.

Subcontractor

- Ensure that all Subcontractors wishing to bid on a Public Works project have an active Contractor Registration with the Public Works and Apprenticeship Application (PWAA) website: <http://www.dws.state.nm.us/pwaa> prior to bidding when their bid will exceed \$60,000.
- Submit weekly certified payroll bi-weekly to the General Contractor(s).
- Make certain the Public Works Apprentice and Training Act contributions are paid either to an approved Apprenticeship Program or to the Public Works Apprentice and Training Fund.
- All Subcontractors and tiers (excluding professional services) regardless of contract amount must be listed on the Subcontractor List and must adhere to the Public Works Minimum Wage Act.

Additional Information

Reference material and forms may be found at New Mexico Department of Workforce Solutions Public Works web pages at: <https://www.dws.state.nm.us/Labor-Relations/Labor-Information/Public-Works>.

CONTACT INFORMATION

Contact the Labor Relations Division for any questions relating to Public Works projects by email at public.works@dws.nm.gov or call (505) 841-4400.



TYPE “B” – GENERAL BUILDING

Effective January 1, 2023

| Trade Classification | Base Rate | Fringe Rate | Apprenticeship |
|--|------------------|--------------------|-----------------------|
| Asbestos Workers/Heat and Frost insulators | 35.56 | 12.26 | 0.60 |
| Asbestos Workers/Heat and Frost insulators: Los Alamos County | 37.99 | 12.26 | 0.60 |
| Boilermaker/blacksmith | 35.88 | 32.28 | 0.60 |
| Boilermaker/blacksmith: San Juan County | 36.83 | 31.88 | 0.60 |
| Bricklayer/Block layer/Stonemason | 24.97 | 9.50 | 0.60 |
| Carpenter/Lather | 27.73 | 12.14 | 0.60 |
| Carpenter: Los Alamos County | 33.18 | 13.58 | 0.60 |
| Millwright/pile driver | 37.10 | 28.30 | 0.60 |
| Cement Mason | 23.04 | 11.30 | 0.60 |
| Electricians-Outside Classifications: Zone 1 | | | |
| Ground man | 25.43 | 11.76 | 0.60 |
| Equipment Operator | 36.48 | 16.09 | 0.60 |
| Lineman or technician | 46.09 | 18.52 | 0.60 |
| Cable Splicer | 47.22 | 18.81 | 0.60 |
| Electricians-Outside Classification: Zone 2 | | | |
| Ground man | 25.43 | 11.76 | 0.60 |
| Equipment Operator | 36.48 | 16.09 | 0.60 |
| Lineman or technician | 46.09 | 18.52 | 0.60 |

| | | | |
|---|-------|-------|------|
| Cable Splicer | 47.22 | 18.81 | 0.60 |
| Electricians-Outside Classifications: Los Alamos County | | | |
| Ground man | 26.15 | 11.78 | 0.60 |
| Equipment Operator | 37.54 | 16.13 | 0.60 |
| Lineman or technician | 47.29 | 18.82 | 0.60 |
| Cable Splicer | 51.93 | 19.98 | 0.60 |
| Electricians-Inside Classifications: Zone 1 | | | |
| Wireman/low voltage technician | 36.75 | 12.40 | 0.60 |
| Cable Splicer | 40.43 | 12.51 | 0.60 |
| Electricians-Inside Classification: Zone 2 | | | |
| Wireman/low voltage technician | 40.06 | 12.50 | 0.60 |
| Cable Splicer | 43.74 | 12.61 | 0.60 |
| Electricians-Inside Classification: Zone 3 | | | |
| Wireman/low voltage technician | 42.26 | 12.57 | 0.60 |
| Cable Splicer | 45.94 | 12.68 | 0.60 |
| Electricians-Inside Classification: Zone 4 | | | |
| Wireman/low voltage technician | 46.31 | 12.69 | 0.60 |
| Cable Splicer | 49.99 | 12.80 | 0.60 |
| Electricians-Inside Classification: Dona Ana, Hidalgo, Luna and Otero Counties | | | |
| Wireman/low voltage technician | 32.07 | 9.81 | 0.60 |
| Cable splicer | 32.07 | 9.81 | 0.60 |
| Electricians-Inside Classification: Los Alamos County | | | |
| Wireman/low voltage technician | 42.26 | 14.68 | 0.60 |
| Cable Splicer | 45.94 | 14.98 | 0.60 |
| Elevator Constructor | 48.93 | 37.49 | 0.60 |

| | | | |
|---|-------|-------|------|
| Elevator Constructor Helper | 39.14 | 37.49 | 0.60 |
| Glazier | | | |
| Journeyman/Fabricator | 21.25 | 6.70 | 0.60 |
| Delivery Driver | 12.00 | 6.70 | 0.60 |
| Glazier: Los Alamos county | 21.25 | 6.70 | 0.60 |
| Ironworker | 28.05 | 18.30 | 0.60 |
| Painter | 18.25 | 8.50 | 0.60 |
| Painter: Los Alamos county | 29.51 | 10.35 | 0.60 |
| Paper Hanger | 18.25 | 8.50 | 0.60 |
| Paper Hanger: Los Alamos county | 30.33 | 10.35 | 0.60 |
| Drywall Finisher/Taper - Light Commercial & Residential | | | |
| Ames tool operator | 26.82 | 8.40 | 0.60 |
| Hand finisher/machine texture | 25.82 | 8.40 | 0.60 |
| Drywall Finisher/Taper – Light Commercial & Residential: Los Alamos county | 29.51 | 10.35 | 0.60 |
| Plasterer | 24.34 | 9.79 | 0.60 |
| Plumber/Pipefitter | 35.11 | 13.40 | 0.60 |
| Roofer | 26.94 | 9.36 | 0.60 |
| Sheet metal worker | | | |
| Zone 1 | 35.44 | 19.00 | 0.60 |
| Zone 2 – Industrial | 36.44 | 19.00 | 0.60 |
| Zone 3 – Los Alamos County | 37.44 | 19.00 | 0.60 |
| Soft Floor Layer | 21.00 | 9.20 | 0.60 |
| Soft Floor Layer: Los Alamos county | 29.55 | 10.45 | 0.60 |
| Sprinkler Fitter | 34.18 | 24.44 | 0.60 |
| Tile Setter | 24.46 | 8.81 | 0.60 |
| Tile Setter Helper/Finisher | 16.53 | 8.81 | 0.60 |
| Laborers | | | |
| Group I- Unskilled | 19.25 | 7.93 | 0.60 |

| | | | |
|-------------------------------------|-------|------|------|
| Group II – Semi-skilled | 19.25 | 7.93 | 0.60 |
| Group III- Skilled | 20.25 | 7.93 | 0.60 |
| Group IV - Specialty | 22.50 | 7.93 | 0.60 |
| Masonry Laborers | | | |
| Group I- Unskilled and Semi-Skilled | 19.75 | 8.09 | 0.60 |
| Group II- Skilled | 21.50 | 8.09 | 0.60 |
| Group III- Specialty | 22.00 | 8.09 | 0.60 |
| Operators | | | |
| Group I | 23.32 | 7.67 | 0.60 |
| Group II | 25.48 | 7.67 | 0.60 |
| Group III | 25.94 | 7.67 | 0.60 |
| Group IV | 26.38 | 7.67 | 0.60 |
| Group V | 26.57 | 7.67 | 0.60 |
| Group VI | 26.78 | 7.67 | 0.60 |
| Group VII | 26.89 | 7.67 | 0.60 |
| Group VIII | 29.93 | 7.67 | 0.60 |
| Group IX | 32.32 | 7.67 | 0.60 |
| Group X | 35.72 | 7.67 | 0.60 |
| Truck Drivers | | | |
| Group I-VII | 16.65 | 8.27 | 0.60 |
| Group VIII | 16.71 | 8.27 | 0.60 |
| Group IX | 18.65 | 8.27 | 0.60 |

NOTE: All contractors are required to pay SUBSISTENCE, ZONE AND INCENTIVE PAY according to the particular trade. Details are located in a PDF attachment at WWW.DWS.STATE.NM.US. Search Labor Relations/Labor Information/Public Works/Prevailing Wage Rates.

For more information about the Subsistence, Zone, and Incentive Pay rates, or to file a wage claim, contact the Labor Relations Division at (505) 841-4400 or visit us online at www.dws.state.nm.us.

SECTION 01 1000 - SUMMARY

PART 1 GENERAL

1.1 PROJECT

- A. Project Name: NMERB New Office Building
- B. Owner's Name: New Mexico Educational Retirement Board.
- C. Owner's Representative: Owner Rep, _____, ___ - ___ - ____, <EMAIL>.
- D. Architect's Name: Dekker/Perich/Sabatini.
- E. The Project consists of the construction of approximately 20,000 square foot, 1-story office building and associated infrastructure improvements and site development.

1.2 CONTRACT DESCRIPTION

- A. Contract Type: A single prime contract based on a Stipulated Price as described in Document 00 5200 - Agreement Form.

1.3 DESCRIPTION OF ALTERATIONS WORK

- A. Scope of demolition and removal work is indicated on drawings and specified in Section 02 4100.
- B. Plumbing: Alter existing system and add new construction, keeping existing in operation.
- C. HVAC: Alter existing system and add new construction, keeping existing in operation.
- D. Electrical Power and Lighting: Alter existing system and add new construction, keeping existing in operation.
- E. Fire Suppression Sprinklers: Alter existing system and add new construction, keeping existing in operation.
- F. Fire Alarm: Alter existing system and add new construction, keeping existing in operation.
- G. Telephone: Alter existing system and add new construction, keeping existing in operation.
- H. Security System: Alter existing system and add new construction, keeping existing in operation.

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Santa Fe, NM

1.4 WORK BY OWNER

- A. Items noted NIC (Not in Contract) will be supplied and installed by Owner after Date of Substantial Completion. Some items include:
 - 1. Movable cabinets.
 - 2. Furnishings.
 - 3. Small equipment.
 - 4. Rugs.

1.5 OWNER OCCUPANCY

- A. Owner intends to occupy the Project upon Substantial Completion.

1.6 CONTRACTOR USE OF SITE

- A. Provide access to and from site as required by law and by Owner:
 - 1. Do not obstruct roadways, sidewalks, or other public ways without permit.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 2000 - PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Change procedures.

1.2 RELATED REQUIREMENTS

- A. Section 00 5000 - Contracting Forms and Supplements: Forms to be used.
- B. Section 00 5200 - Agreement Form: Contract Sum, retainages, payment period, monetary values of unit prices.
- C. Section 00 7200 - General Conditions: Additional requirements for progress payments, final payment, changes in the Work.
- D. Section 01 2100 - Allowances: Payment procedures relating to allowances.
- E. Section 01 7800 - Closeout Submittals: Project record documents.

1.3 SCHEDULE OF VALUES

- A. Use Schedule of Values Form: AIA G703, edition stipulated in the Agreement.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Architect for approval.
- C. Forms filled out by hand will not be accepted.
- D. Submit Schedule of Values in electronic format within 15 days after date of Owner-Contractor Agreement.
- E. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification section. Identify site mobilization, bonds and insurance, and general conditions, and closeout. Refer to the Agreement.
- F. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances as a product of the unit cost multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
- G. Include in each line item, the amount of Allowances specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.

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Santa Fe, NM

- H. Revise schedule to list approved Change Orders, with each Application For Payment.

1.4 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Use Form AIA G702 and Form AIA G703, edition stipulated in the Agreement.
- C. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.
- D. Forms filled out by hand will not be accepted.
- E. For each item, provide a column for listing each of the following:
 - 1. Item Number.
 - 2. Description of work.
 - 3. Scheduled Values.
 - 4. Previous Applications.
 - 5. Work in Place and Stored Materials under this Application.
 - 6. Authorized Change Orders.
 - 7. Total Completed and Stored to Date of Application.
 - 8. Percentage of Completion.
 - 9. Balance to Finish.
 - 10. Closeout.
- F. Execute certification by signature of authorized officer.
- G. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
- H. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.
- I. Include the following with the application:
 - 1. Transmittal letter as specified for submittals in Section 01 3000.
 - 2. Construction progress schedule, revised and current as specified in Section 01 3000.
 - 3. Current construction photographs specified in Section 01 3000.
 - 4. Partial release of liens from major subcontractors and vendors.
 - 5. Project record documents as specified in Section 01 7800, for review by Owner which will be returned to the Contractor.

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- J. When Architect requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.
- K. Stored Materials: Include in Applications for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site. Store off-site stored materials in the vicinity of the project in a bonded and insured warehouse.
 - 1. Provide supporting documentation verifying amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation. Do not include overhead and profit on stored materials.
 - 2. On-site stored materials:
 - a. Provide invoices for materials stored on-site. No payment will be made for materials that are not secured and protected from theft and damage.
 - b. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
 - 3. Provide summary documentation of stored materials indicating the following:
 - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

1.5 MODIFICATION PROCEDURES

- A. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect will issue Architect's Supplemental Instructions (ASI) directly to Contractor.
- B. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
 - 1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
 - 2. Promptly execute the change.
- C. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 15 days.
- D. Contractor may propose a change by submitting a request for change to Architect, describing the proposed change and its full effect on the work, with a statement describing the reason for

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the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on work by separate or other contractors. Document any requested substitutions in accordance with Section 01 6000.

- E. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
 - 1. For change requested by Architect for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
 - 2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Architect.

- F. Substantiation of Costs: Provide full information required for evaluation.
 - 1. On request, provide the following data:
 - a. Quantities of products, labor, and equipment.
 - b. Taxes, insurance, and bonds.
 - c. Overhead and profit.
 - d. Justification for any change in Contract Time.
 - e. Credit for deletions from Contract, similarly documented.
 - 2. Support each claim for additional costs with additional information:
 - a. Origin and date of claim.
 - b. Dates and times work was performed, and by whom.
 - c. Time records and wage rates paid.
 - d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
 - 3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.

- G. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

- H. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.

- I. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.

1.6 APPLICATION FOR FINAL PAYMENT

- A. Application for Final Payment: Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.

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- B. Application for Final Payment will not be considered until the following have been submitted:
1. Evidence of completion of Project closeout requirements as specified in Section 01 7000 Closeout Procedures.
 2. All conditions stipulated in the General Conditions relating to completion.

END OF SECTION

SECTION 01 2100 - ALLOWANCES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Cash allowances.
- B. Contingency allowance.
- C. Inspecting and testing allowances.
- D. Payment and modification procedures relating to allowances.

1.2 RELATED REQUIREMENTS

- A. Section 01 2000 - Price and Payment Procedures: Additional payment and modification procedures.

1.3 CASH ALLOWANCES

- A. Costs Included in Cash Allowances: Cost of product to Contractor or subcontractor, less applicable trade discounts, less cost of delivery to site, less applicable taxes.
- B. Costs Not Included in Cash Allowances: Product delivery to site and handling at the site, including unloading, uncrating, and storage; protection of products from elements and from damage; and labor for installation and finishing.
- C. Architect Responsibilities:
 - 1. Consult with Contractor for consideration and selection of products, suppliers, and installers.
 - 2. Select products in consultation with Owner and transmit decision to Contractor.
 - 3. Prepare Change Order.
- D. Contractor Responsibilities:
 - 1. Assist Architect in selection of products, suppliers, and installers.
 - 2. Obtain proposals from suppliers and installers and offer recommendations.
 - 3. On notification of which products have been selected, execute purchase agreement with designated supplier and installer.
 - 4. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.
 - 5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.

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- E. Differences in costs will be adjusted by Change Order.

1.4 CONTINGENCY ALLOWANCE

- A. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead and profit will be included in Change Orders authorizing expenditure of funds from this Contingency Allowance.
- B. Funds will be drawn from the Contingency Allowance only by Change Order.
- C. At closeout of Contract, funds remaining in Contingency Allowance will be credited to Owner by Change Order.

1.5 INSPECTING AND TESTING ALLOWANCES

- A. Costs Included in Inspecting and Testing Allowances: Cost of engaging an inspecting or testing agency; execution of inspecting and tests; and reporting results.
- B. Costs Not Included in the Inspecting and Testing Allowances:
 - 1. Costs of incidental labor and facilities required to assist inspecting or testing agency.
 - 2. Costs of testing services used by Contractor separate from Contract Document requirements.
 - 3. Costs of retesting upon failure of previous tests as determined by Architect.
- C. Payment Procedures:
 - 1. Submit one copy of the inspecting or testing firm's invoice with next application for payment.
 - 2. Pay invoice on approval by Architect.
- D. Differences in cost will be adjusted by Change Order.

1.6 ALLOWANCES SCHEDULE

- A. Contingency Allowance: Include the stipulated sum/price of \$_____ for use upon Owner's instructions.
- B. Inspecting and Testing Allowance: Include the sum of \$_____ for payment of inspecting and testing services specified in Section 01 4000 - Quality Requirements.
- C. HVAC Testing, Adjusting, and Balancing Allowance: Include the sum of \$_____ for testing, adjusting, and balancing mechanical systems as specified in Division 23.

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PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 2300 - ALTERNATES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Procedures for pricing Alternates.
- B. Documentation of changes to Contract Sum and Contract Time.

1.2 RELATED REQUIREMENTS

- A. Document 00 5200 - Agreement Form: Incorporating monetary value of accepted Alternates.

1.3 ACCEPTANCE OF ALTERNATES

- A. Alternates quoted on Proposal / Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in the Owner-Contractor Agreement.
- B. Contractor will be responsible for any changes in the work affected by the acceptance of any Alternate. Claims for extra payment resulting from changes caused by any accepted Alternate will not be allowed.
- C. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.

1.4 SCHEDULE OF ALTERNATES

- A. Alternate No. 1 - Site and Civil:
 - 1. Base Bid Item: Provide site, civil, and landscape without driveway access to Las Soleras.
 - 2. Alternate Item: Provide site, civil, and landscape with driveway access to Las Soleras.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 2500 - SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Procedural requirements for proposed substitutions.

1.2 RELATED REQUIREMENTS

- A. Section 00 4325 - Substitution Request Form - During Procurement: Required form for substitution requests made prior to award of contract (During procurement).
- B. Section 00 6325 - Substitution Request Form - During Construction: Required form for substitution requests made after award of contract (During construction).
- C. Section 01 2300 - Alternates, for product alternatives affecting this section.
- D. Section 01 3000 - Administrative Requirements: Submittal procedures, coordination.
- E. Section 01 6000 - Product Requirements: Fundamental product requirements, product options, delivery, storage, and handling.

1.3 DEFINITIONS

- A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.
 - 1. Substitutions for Cause: Proposed due to changed Project circumstances beyond Contractor's control.
 - a. Unavailability.
 - b. Regulatory changes.
 - 2. Substitutions for Convenience: Proposed due to possibility of offering substantial advantage to the Project.
 - a. Substitution requests offering advantages solely to the Contractor will not be considered.

1.4 REFERENCE STANDARDS

- A. CSI/CSC Form 1.5C - Substitution Request (During the Bidding/Negotiating Stage); Current Edition.
- B. CSI/CSC Form 13.1A - Substitution Request (After the Bidding/Negotiating Phase); Current Edition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

- A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
 - 2. Agrees to provide the same warranty for the substitution as for the specified product.
 - 3. Agrees to provide same or equivalent maintenance service and source of replacement parts, as applicable.
 - 4. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
 - 5. Waives claims for additional costs or time extension that may subsequently become apparent.

- B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
 - 1. Note explicitly any non-compliant characteristics.

- C. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
 - 1. Forms indicated and included in the Project Manual are adequate for this purpose, and must be used.

- D. Limit each request to a single proposed substitution item.
 - 1. Submit an electronic document, combining the request form with supporting data into single document.

3.2 SUBSTITUTION PROCEDURES DURING PROCUREMENT

- A. Submittal Time Restrictions:
 - 1. Owner will consider requests for substitutions only if submitted at least 7 days prior to the date for receipt of bids.

- B. Submittal Form (before award of contract):

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1. Submit substitution requests by completing CSI/CSC Form 1.5C - Substitution Request. See this form for additional information and instructions. Use only this form; other forms of submission are unacceptable.

3.3 SUBSTITUTION PROCEDURES DURING CONSTRUCTION

- A. Submittal Form (after award of contract):
 1. Submit substitution requests by completing CSI/CSC Form 13.1A - Substitution Request (After Bidding/Negotiating). See this form for additional information and instructions. Use only this form; other forms of submission are unacceptable.
- B. Submit request for Substitution for Cause within 14 days of discovery of need for substitution, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
- C. Submit request for Substitution for Convenience immediately upon discovery of its potential advantage to the project, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
 1. In addition to meeting general documentation requirements, document how the requested substitution benefits the Owner through cost savings, time savings, greater energy conservation, or in other specific ways.
 2. Document means of coordinating of substitution item with other portions of the work, including work by affected subcontractors.
 3. Bear the costs engendered by proposed substitution of:
 - a. Owner's compensation to the Architect for any required redesign, time spent processing and evaluating the request.
 - b. Other unanticipated project considerations.
- D. Substitutions will not be considered under one or more of the following circumstances:
 1. When they are indicated or implied on shop drawing or product data submittals, without having received prior approval.
 2. Without a separate written request.

3.4 RESOLUTION

- A. Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.
- B. Architect will notify Contractor in writing of decision to accept or reject request.
 1. Architect's decision following review of proposed substitution will be noted on the submitted form.

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3.5 ACCEPTANCE

- A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

END OF SECTION

SECTION 01 3000 - ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. General administrative requirements.
- B. Electronic document submittal service.
- C. Preconstruction meeting.
- D. Progress meetings.
- E. Construction progress schedule.
- F. Contractor's daily reports.
- G. Progress photographs.
- H. Submittals for review, information, and project closeout.
- I. Number of copies of submittals.
- J. Requests for Interpretation (RFI) procedures.
- K. Submittal procedures.

1.2 RELATED REQUIREMENTS

- A. Section 00 1000 - Request for Proposal (RFP), Appendix J, Part B for applications for payment.
- B. Section 01 6000 - Product Requirements: General product requirements.
- C. Section 01 7000 - Execution and Closeout Requirements: Additional coordination requirements.
- D. Section 01 7800 - Closeout Submittals: Project record documents; operation and maintenance data; warranties and bonds.

1.3 GENERAL ADMINISTRATIVE REQUIREMENTS

- A. Comply with requirements of Section 01 7000 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.
- B. Make the following types of submittals to Architect:

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1. Requests for Interpretation (RFI).
2. Requests for substitution.
3. Shop drawings, product data, and samples.
4. Test and inspection reports.
5. Design data.
6. Manufacturer's instructions and field reports.
7. Applications for payment and change order requests.
8. Progress schedules.
9. Coordination drawings.
10. Correction Punch List and Final Correction Punch List for Substantial Completion.
11. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 ELECTRONIC DOCUMENT SUBMITTAL SERVICE

- A. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF, MS Word, or MS Excel) format, as appropriate to the document, and transmitted via an Internet-based submittal service that receives, logs and stores documents, provides electronic stamping and signatures, and notifies addressees via email.
 1. Besides submittals for review, information, and closeout, this procedure applies to Requests for Interpretation (RFIs), progress documentation, contract modification documents (e.g. supplementary instructions, change proposals, change orders), applications for payment, field reports and meeting minutes, Contractor's correction punchlist, and any other document any participant wishes to make part of the project record.
 2. Contractor and Architect are required to use this service.
 3. It is Contractor's responsibility to submit documents in allowable format.
 4. Users of the service need an email address, internet access, and PDF review software that includes ability to mark up and apply electronic stamps (such as Adobe Acrobat, www.adobe.com, or Bluebeam PDF Revu, www.bluebeam.com), unless such software capability is provided by the service provider.
 5. Paper document transmittals will not be reviewed; emailed electronic documents will not be reviewed.
 6. All other specified submittal and document transmission procedures apply, except that electronic document requirements do not apply to samples or color selection charts.

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- B. Submittal Service: Unless otherwise agreed to by the Architect, owner and GC The selected service is:
 - 1. Bluebeam Studio Projects and Sessions.
- C. Training: One, one-hour, web-based training session will be arranged for all participants, with representatives of Architect and Contractor participating; further training is the responsibility of the user of the service.
 - 1. Representatives of Owner are scheduled and included in this training.
- D. Project Closeout: Architect will determine when to terminate the service for the project and is responsible for obtaining archive copies of files for Owner.

3.2 PRECONSTRUCTION MEETING

- A. Owner will schedule a meeting after Notice of Award.
- B. Attendance Required:
 - 1. Owner.
 - 2. Architect.
 - 3. Contractor.
- C. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Submission of schedule of values, and progress schedule.
 - 5. Submission of initial Submittal schedule.
 - 6. Designation of personnel representing the parties to Contract and Architect.
 - 7. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 - 8. Scheduling.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.3 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the work at maximum weekly intervals.

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- B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Attendance Required:
 - 1. Contractor.
 - 2. Owner.
 - 3. Architect.
 - 4. Special consultants.
 - 5. Contractor's superintendent.
 - 6. Major subcontractors.
- D. Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review of work progress.
 - 3. Field observations, problems, and decisions.
 - 4. Identification of problems that impede, or will impede, planned progress.
 - 5. Review of submittals schedule and status of submittals.
 - 6. Review of RFIs log and status of responses.
 - 7. Review of off-site fabrication and delivery schedules.
 - 8. Maintenance of progress schedule.
 - 9. Corrective measures to regain projected schedules.
 - 10. Planned progress during succeeding work period.
 - 11. Maintenance of quality and work standards.
 - 12. Effect of proposed changes on progress schedule and coordination.
 - 13. Other business relating to work.
- E. Record minutes and distribute copies within two days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

3.4 CONSTRUCTION PROGRESS SCHEDULE

- A. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of work, with a general outline for remainder of work.
- B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.

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1. Include written certification that major contractors have reviewed and accepted proposed schedule.
- D. Within 10 days after joint review, submit complete schedule.
- E. Submit updated schedule with each Application for Payment.

3.5 DAILY CONSTRUCTION REPORTS

- A. Include only factual information. Do not include personal remarks or opinions regarding operations and/or personnel.
- B. Transmit daily reports to Owner and Architect via submittal service.
- C. Prepare a daily construction report recording the following information concerning events at Project site and project progress:
 1. Date.
 2. High and low temperatures, and general weather conditions.
 3. List of subcontractors at Project site.
 4. Approximate count of personnel at Project site.
 5. Major equipment at Project site.
 6. Material deliveries.
 7. Safety, environmental, or industrial relations incidents.
 8. Meetings and significant decisions.
 9. Unusual events (submit a separate special report).
 10. Stoppages, delays, shortages, and losses. Include comparison between scheduled work activities (in Contractor's most recently updated and published schedule) and actual activities. Explain differences, if any. Note days or periods when no work was in progress and explain the reasons why.
 11. Directives and requests of Authority(s) Having Jurisdiction (AHJ).
 12. Change Orders received and implemented.
 13. Testing and/or inspections performed.
 14. List of verbal instruction given by Owner and/or Architect.
 15. Signature of Contractor's authorized representative.

3.6 PROGRESS PHOTOGRAPHS

- A. Submit photographs with each application for payment, taken not more than 3 days prior to submission of application for payment.

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- B. Photography Type: Digital; electronic files.
- C. Provide photographs of site and construction throughout progress of work produced by an experienced photographer, acceptable to Architect.
- D. In addition to periodic, recurring views, take photographs of each of the following events:
 - 1. Completion of site clearing.
 - 2. Excavations in progress.
 - 3. Foundations in progress and upon completion.
 - 4. Structural framing in progress and upon completion.
 - 5. Enclosure of building, upon completion.
 - 6. Final completion, minimum of ten (10) photos.
- E. Views:
 - 1. Provide non-aerial photographs from four cardinal views at each specified time, until date of Substantial Completion.
 - 2. Consult with Architect for instructions on views required.
 - 3. Provide factual presentation.
 - 4. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.
 - 5. Point of View Sketch: Provide sketch identifying point of view of each photograph.
- F. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
 - 1. Delivery Medium: electronic submittal service.
 - 2. File Naming: Include project identification, date and time of view, and view identification.
 - 3. Point of View Sketch: Include digital copy of point of view sketch with each electronic submittal; include point of view identification in each photo file name.

3.7 REQUESTS FOR INTERPRETATION (RFI)

- A. Definition: A request seeking one of the following:
 - 1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
 - 2. A resolution to an issue which has arisen due to field conditions and affects design intent.

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- B. Preparation: Prepare RFI immediately upon discovery of a need for interpretation of the Contract Documents. Failure to submit RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
1. Prepare a separate RFI for each specific item.
 - a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
 - b. Do not forward requests which solely require internal coordination between subcontractors.
 2. Prepare in a format and with content acceptable to Owner.
 - a. Use AIA G716 - Request for Information.
 - b. Use CSI/CSC Form 13.2A - Request for Interpretation.
 3. Prepare using software provided by the Electronic Document Submittal Service.
 4. Combine RFI and its attachments into a single electronic file. PDF format is preferred.
- C. Reason for the RFI: Prior to initiation of a RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
1. Include in each request Contractor's signature attesting to good faith effort to determine from Contract Documents information requiring interpretation.
 2. Unacceptable Uses for RFIs: Do not use RFIs to request the following:
 - a. Approval of submittals (use procedures specified elsewhere in this section).
 - b. Approval of substitutions (see Section - 01 6000 - Product Requirements)
 - c. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Conditions of the Contract).
 - d. Different methods of performing work than those indicated in the Contract Drawings and Specifications (comply with provisions of the Conditions of the Contract).
 3. Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.
 4. Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, Contract Documents, with no additional input required to clarify the question. They will be returned without a response, with an explanatory notation.
 - a. The Owner reserves the right to assess the Contractor for the costs (on time-and-materials basis) incurred by the Architect, and any of its consultants, due to processing of such RFIs.
- D. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
1. Official Project name and number, and any additional required identifiers established in Contract Documents.

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2. Owner's, Architect's, and Contractor's names.
 3. Discrete and consecutive RFI number, and descriptive subject/title.
 4. Issue date, and requested reply date.
 5. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
 6. Annotations: Field dimensions and/or description of conditions which have engendered the request.
 7. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.
- E. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.
- F. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
1. Indicate current status of every RFI. Update log promptly and on a regular basis.
 2. Note dates of when each request is made, and when a response is received.
 3. Highlight items requiring priority or expedited response.
 4. Highlight items for which a timely response has not been received to date.
 5. Remove improper or frivolous RFIs.
- G. Review Time: Architect will respond and return RFIs to Contractor within ten working days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.
1. Response period may be shortened or lengthened for specific items, subject to mutual agreement, and recorded in a timely manner in progress meeting minutes.
- H. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.
1. Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify the amended RFI with an R suffix to the original number.
 2. Do not extend applicability of a response to specific item to encompass other similar conditions, unless specifically so noted in the response.
 3. Upon receipt of a response, promptly review and distribute it to all affected parties, and update the RFI Log.

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4. Notify Architect within seven working days if an additional or corrected response is required by submitting an amended version of the original RFI, identified as specified above.

3.8 SUBMITTAL SCHEDULE

- A. Submit to Architect for review a schedule for submittals in tabular format.
 1. Submit at the same time as the preliminary schedule.
 2. Coordinate with Contractor's construction schedule and schedule of values.
 3. Format schedule to allow tracking of status of submittals throughout duration of construction.
 4. Arrange information to include scheduled date for initial submittal, specification number and title, submittal category (for review or for information), description of item of work covered, and role and name of subcontractor.
 5. Account for time required for preparation, review, manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.
 - a. For assemblies, equipment, systems comprised of multiple components and/or requiring detailed coordination with other work, allow for additional time to make corrections or revisions to initial submittals, and time for their review.

3.9 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
 1. Product data.
 2. Shop drawings.
 3. Samples for selection.
 4. Samples for verification.
- B. Submit to Architect for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.
- C. Samples will be reviewed for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 7800 - Closeout Submittals.

3.10 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
 1. Design data.

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2. Certificates.
 3. Test reports.
 4. Inspection reports.
 5. Manufacturer's instructions.
 6. Manufacturer's field reports.
 7. Other types indicated.
- B. Submit for Architect's knowledge as contract administrator or for Owner. No action will be taken.

3.11 SUBMITTALS FOR PROJECT CLOSEOUT

- A. Submit Correction Punch List for Substantial Completion.
- B. Submit Final Correction Punch List for Substantial Completion.
- C. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 7800 - Closeout Submittals:
 1. Project record documents.
 2. Operation and maintenance data.
 3. Warranties.
 4. Bonds.
 5. Other types as indicated.
- D. Final Property Survey.
- E. Submit for Owner's benefit during and after project completion.

3.12 NUMBER OF COPIES OF SUBMITTALS

- A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
- B. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
 1. After review, produce duplicates.
 2. Retained samples will not be returned to Contractor unless specifically so stated.

3.13 SUBMITTAL PROCEDURES

A. General Requirements:

1. Use a single transmittal for related items.
2. Submit separate packages of submittals for review and submittals for information, when included in the same specification section.
3. Transmit using approved form.
 - a. Use Contractor's form, subject to prior approval by Architect.
4. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
5. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
6. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
 - a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
7. Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
 - a. Upload submittals in electronic form to Electronic Document Submittal Service website.
8. Schedule submittals to expedite the Project, and coordinate submission of related items.
 - a. For each submittal for review, allow 15 working days excluding delivery time to and from the Contractor.
 - b. For sequential reviews involving Architect's consultants, Owner, or another affected party, allow an additional 7 working days.
 - c. For sequential reviews involving approval from authorities having jurisdiction (AHJ), in addition to Architect's approval, allow an additional 30 working days.
9. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
10. Provide space for Contractor and Architect review stamps.
11. When revised for resubmission, identify all changes made since previous submission.
12. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
13. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
14. Submittals not requested will be recognized, and will be returned "Not Reviewed",

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- B. Product Data Procedures:
 - 1. Submit only information required by individual specification sections.
 - 2. Collect required information into a single submittal.
 - 3. Submit concurrently with related shop drawing submittal.
 - 4. Do not submit (Material) Safety Data Sheets for materials or products.

- C. Shop Drawing Procedures:
 - 1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
 - 2. Do not reproduce Contract Documents to create shop drawings.
 - 3. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.

- D. Samples Procedures:
 - 1. Transmit related items together as single package.
 - 2. Identify each item to allow review for applicability in relation to shop drawings showing installation locations.

3.14 SUBMITTAL REVIEW

- A. Submittals for Review: Architect will review each submittal, and approve, or take other appropriate action.

- B. Submittals for Information: Architect will acknowledge receipt and review. See below for actions to be taken.

- C. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
 - 1. Notations may be made directly on submitted items and/or listed on appended Submittal Review cover sheet.

- D. Architect's and consultants' actions on items submitted for review:
 - 1. Authorizing purchasing, fabrication, delivery, and installation:
 - a. "Approved", or language with same legal meaning.
 - 1) Item is considered acceptable as meeting the design intent.
 - b. "Approved as Noted", or language with same legal meaning.
 - 1) Item is acceptable as meeting the design intent in the manner indicated by the notations.
 - 2) Contractor may proceed with the work related to the submittal, incorporating the comments noted by the Architect.
 - 3) Resubmittal is not required.

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2. Not Authorizing fabrication, delivery, and installation:
 - a. "Revise and Resubmit".
 - 1) Item is rejected as unacceptable to meet the design intent.
 - 2) Resubmit revised item, with review notations acknowledged and incorporated.
 - b. "Submit Specified Item".
 - 1) Provide a submittal for the item(s) as listed in the specification section.
 - c. "Rejected".
 - 1) Submit item(s) in compliance with requirements of Contract Documents.

- E. Architect's and consultants' actions on items submitted for information:
 1. Items for which no action was taken:
 - a. "Received" - to notify the Contractor that the submittal has been received for record only.
 2. Items for which action was taken:
 - a. "Reviewed" - no further action is required from Contractor.

END OF SECTION

SECTION 01 4000 - QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Submittals.
- B. Quality assurance.
- C. References and standards.
- D. Testing and inspection agencies and services.
- E. Contractor's construction-related professional design services.
- F. Contractor's design-related professional design services.
- G. Control of installation.
- H. Mock-ups.
- I. Tolerances.
- J. Manufacturers' field services.
- K. Defect Assessment.

1.2 RELATED REQUIREMENTS

- A. Document 00 3100 - Available Project Information: Soil investigation data.
- B. Section 01 3000 - Administrative Requirements: Submittal procedures.
- C. Section 01 4533 - Code-Required Special Inspections and Procedures.
- D. Section 01 6000 - Product Requirements: Requirements for material and product quality.

1.3 REFERENCE STANDARDS

- A. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants; 2008 (Reapproved 2014).
- B. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation; 2017.

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- C. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2015a, with Editorial Revision (2016).
- D. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2012a.
- E. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2018.
- F. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2015.
- G. ASTM E699 - Standard Specification for Agencies Involved in Testing, Quality Assurance, and Evaluating of Manufactured Building Components; 2016.
- H. IAS AC89 - Accreditation Criteria for Testing Laboratories; 2017.

1.4 DEFINITIONS

- A. Contractor's Professional Design Services: Design of some aspect or portion of the project by party other than the design professional of record. Provide these services as part of the Contract for Construction.
 - 1. Design Services Types Required:
 - a. Construction-Related: Services Contractor needs to provide in order to carry out the Contractor's sole responsibilities for construction means, methods, techniques, sequences, and procedures.
 - b. Design-Related: Design services explicitly required to be performed by another design professional due to highly-technical and/or specialized nature of a portion of the project. Services primarily involve engineering analysis, calculations, and design, and are not intended to alter the aesthetic aspects of the design.
- B. Design Data: Design-related, signed and sealed drawings, calculations, specifications, certifications, shop drawings and other submittals provided by Contractor, and prepared directly by, or under direct supervision of, appropriately licensed design professional.

1.5 CONTRACTOR'S CONSTRUCTION-RELATED PROFESSIONAL DESIGN SERVICES

- A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.
- B. Provide such engineering design services as may be necessary to plan and safely conduct certain construction operations, pertaining to, but not limited to the following:
 - 1. Temporary sheeting, shoring, or supports.
 - 2. Temporary scaffolding.

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3. Temporary bracing.

1.6 CONTRACTOR'S DESIGN-RELATED PROFESSIONAL DESIGN SERVICES

- A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.
- B. Base design on performance and/or design criteria indicated in individual specification sections.
 1. Submit a Request for Information to Architect if the criteria indicated are not sufficient to perform required design services.
- C. Scope of Contractor's Professional Design Services: Provide for the following items of work:

1.7 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Designer's Qualification Statement: Submit for Architect's knowledge as contract administrator, or for Owner's information.
 1. Include information for each individual professional responsible for producing, or supervising production of, design-related professional services provided by Contractor.
 - a. Full name.
 - b. Professional licensure information.
 - c. Statement addressing extent and depth of experience specifically relevant to design of items assigned to Contractor.
- C. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.
 1. Include calculations that have been used to demonstrate compliance to performance and regulatory criteria provided, and to determine design solutions.
 2. Include required product data and shop drawings.
 3. Include a statement or certification attesting that design data complies with criteria indicated, such as building codes, loads, functional, and similar engineering requirements.
 4. Include signature and seal of design professional responsible for allocated design services on calculations and drawings.
- D. Test Reports: After each test/inspection, promptly submit one digital copy of report to Architect and to Contractor.
 1. Include:
 - a. Date issued.

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- b. Project title and number.
 - c. Name of inspector.
 - d. Date and time of sampling or inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of test/inspection.
 - h. Date of test/inspection.
 - i. Results of test/inspection.
 - j. Compliance with Contract Documents.
 - k. When requested by Architect, provide interpretation of results.
2. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.
- E. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor to Architect, in quantities specified for Product Data.
- 1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 - 2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.
- F. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- G. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
- 1. Submit report within 30 days of observation to Architect for information.
 - 2. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.
- H. Erection Drawings: Submit drawings for Architect's benefit as contract administrator or for Owner.
- 1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.
 - 2. Data indicating inappropriate or unacceptable Work may be subject to action by Architect or Owner.

1.8 QUALITY ASSURANCE

- A. Testing Agency Qualifications:
 - 1. Prior to start of work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
- B. Designer Qualifications: Where professional engineering design services and design data submittals are specifically required of Contractor by Contract Documents, provide services of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

1.9 REFERENCES AND STANDARDS

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification sections.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
- F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from Contract Documents by mention or inference otherwise in any reference document.

1.10 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. Unless otherwise indicated, Owner will employ and pay for services of an independent testing agency to perform specified testing and inspection.
- B. Contractor shall employ and pay for services of an independent testing agency to perform other specified testing.
- C. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- D. Contractor Employed Agency:

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1. Testing agency: Comply with requirements of ASTM E329, ASTM E543, ASTM C1021, ASTM C1077, ASTM C1093, and ASTM D3740.
2. Inspection agency: Comply with requirements of ASTM D3740 and ASTM E329.
3. Laboratory Qualifications: Accredited by IAS according to IAS AC89.
4. Laboratory: Authorized to operate in the State in which the Project is located.
5. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
6. Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement quality assurance program.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.2 MOCK-UPS

- A. Before installing portions of the Work where mock-ups are required, construct mock-ups in location and size indicated for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work. The purpose of mock-up is to demonstrate the proposed range of aesthetic effects and workmanship.

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- B. Accepted mock-ups establish the standard of quality the Architect will use to judge the Work.
- C. Integrated Exterior Mock-ups: Construct integrated exterior mock-up as indicated on drawings. Coordinate installation of exterior envelope materials and products as required in individual Specification Sections. Provide adequate supporting structure for mock-up materials as necessary.
- D. Notify Architect fifteen (15) working days in advance of dates and times when mock-ups will be constructed.
- E. Provide supervisory personnel who will oversee mock-up construction. Provide workers that will be employed during the construction at Project.
- F. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- G. Obtain Architect's approval of mock-ups before starting work, fabrication, or construction.
 - 1. Architect will issue written comments within seven (7) working days of initial review and each subsequent follow up review of each mock-up.
 - 2. Make corrections as necessary until Architect's approval is issued.
- H. Architect will use accepted mock-ups as a comparison standard for the remaining Work.
- I. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by Architect.
- J. Where possible salvage and recycle the demolished mock-up materials.

3.3 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

3.4 TESTING AND INSPECTION

- A. See individual specification sections for testing and inspection required.
- B. Testing Agency Duties:
 - 1. Test samples of mixes submitted by Contractor.

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2. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 3. Perform specified sampling and testing of products in accordance with specified standards.
 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 5. Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.
 6. Perform additional tests and inspections required by Architect.
 7. Submit reports of all tests/inspections specified.
- C. Limits on Testing/Inspection Agency Authority:
1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 2. Agency may not approve or accept any portion of the Work.
 3. Agency may not assume any duties of Contractor.
 4. Agency has no authority to stop the Work.
- D. Contractor Responsibilities:
1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
 3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. To provide storage and curing of test samples.
 4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
 5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
 6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- E. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.
- F. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.5 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance equipment as applicable, and to initiate instructions when necessary.
- B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.6 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not complying with specified requirements.
- B. If, in the opinion of Architect, it is not practical to remove and replace the work, Architect will direct an appropriate remedy or adjust payment.

END OF SECTION

SECTION 01 4533 - CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Code-required special inspections.
- B. Testing services incidental to special inspections.
- C. Submittals.
- D. Manufacturers' field services.
- E. Fabricators' field services.

1.2 RELATED REQUIREMENTS

- A. Document 00 3100 - Available Project Information: Soil investigation data.
- B. Document 00 7200 - General Conditions: Inspections and approvals required by public authorities.
- C. Section 01 3000 - Administrative Requirements: Submittal procedures.
- D. Section 01 4000 - Quality Requirements.
- E. Section 01 6000 - Product Requirements: Requirements for material and product quality.

1.3 ABBREVIATIONS AND ACRONYMS

- A. AHJ: Authority having jurisdiction.
- B. IAS: International Accreditation Service, Inc.
- C. NIST: National Institute of Standards and Technology.

1.4 DEFINITIONS

- A. Code or Building Code: ICC (IBC), International Building Code, Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements and specifically, Chapter 17 - Special Inspections and Tests.
- B. Authority Having Jurisdiction (AHJ): Agency or individual officially empowered to enforce the building, fire and life safety code requirements of the permitting jurisdiction in which the Project is located.

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C. Special Inspection:

1. Special inspections are inspections and testing of materials, installation, fabrication, erection or placement of components and connections mandated by the AHJ that also require special expertise to ensure compliance with the approved Contract Documents and the referenced standards.
2. Special inspections are separate from and independent of tests and inspections conducted by Owner or Contractor for the purposes of quality assurance and contract administration.

1.5 REFERENCE STANDARDS

- A. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2014 (Errata 2017).
- B. AISC 360 - Specification for Structural Steel Buildings; 2016 (Revised 2021).
- C. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field; 2021a.
- D. ASTM C172/C172M - Standard Practice for Sampling Freshly Mixed Concrete; 2017.
- E. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2018.
- F. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2015.
- G. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2021).
- H. IAS AC89 - Accreditation Criteria for Testing Laboratories; 2017.
- I. IAS AC291 - Accreditation Criteria for Special Inspection Agencies AC291; 2019.
- J. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- K. ICC (IBC)-2018 - International Building Code; 2018.
- L. SDI (QA/QC) - Standard for Quality Control and Quality Assurance for Installation of Steel Deck; 2017.
- M. SJI 100 - Standard Specifications for K-Series, LH-Series, and DLH-Series Open Web Steel Joists, and for Joist Girders; 2020.

1.6 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

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- B. Special Inspection Agency Qualifications: Prior to the start of work, the Special Inspection Agency is required to:
 - 1. Submit agency name, address, and telephone number, names of full time registered Engineer and responsible officer.
 - 2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
 - 3. Submit certification that Special Inspection Agency is acceptable to AHJ.

- C. Testing Agency Qualifications: Prior to the start of work, the Testing Agency is required to:
 - 1. Submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
 - 2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
 - 3. Submit certification that Testing Agency is acceptable to AHJ.

- D. Fabricator's Qualification Statement: Fabricator is required to submit documentation of fabrication facilities and methods as well as quality control procedures. Include documentation of AHJ approval.

- E. Special Inspection Reports: After each special inspection, Special Inspector is required to promptly submit at least two copies of report; one to Architect and one to the AHJ.
 - 1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of Special Inspector.
 - d. Date and time of special inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of special inspection.
 - h. Date of special inspection.
 - i. Results of special inspection.
 - j. Compliance with Contract Documents.
 - 2. Final Special Inspection Report: Document special inspections and correction of discrepancies prior to the start of the work.

- F. Fabricator Special Inspection Reports: After each special inspection of fabricated items at the Fabricator's facility, Special Inspector is required to promptly submit at least two copies of report; one to Architect and one to AHJ.

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1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of Special Inspector.
 - d. Date and time of special inspection.
 - e. Identification of fabricated item and specification section.
 - f. Location in the Project.
 - g. Results of special inspection.
 - h. Verification of fabrication and quality control procedures.
 - i. Compliance with Contract Documents.
 - j. Compliance with referenced standard(s).

- G. Test Reports: After each test or inspection, promptly submit at least two copies of report; one to Architect and one to AHJ.
 1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of inspector.
 - d. Date and time of sampling or inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of test or inspection.
 - h. Date of test or inspection.
 - i. Results of test or inspection.
 - j. Compliance with Contract Documents.

1.7 SPECIAL INSPECTION AGENCY

- A. Owner will employ services of a Special Inspection Agency to perform inspections and associated testing and sampling in accordance with ASTM E329 and required by the building code.

- B. The Special Inspection Agency may employ and pay for services of an independent testing agency to perform testing and sampling associated with special inspections and required by the building code.

- C. Employment of agency in no way relieves Contractor of obligation to perform work in accordance with requirements of Contract Documents.

1.8 TESTING AND INSPECTION AGENCIES

- A. Owner may employ services of an independent testing agency to perform additional testing and sampling associated with special inspections but not required by the building code.
- B. Employment of agency in no way relieves Contractor of obligation to perform work in accordance with requirements of Contract Documents.

1.9 QUALITY ASSURANCE

- A. Special Inspection Agency Qualifications:
 - 1. Independent firm specializing in performing testing and inspections of the type specified in this section.
 - 2. Accredited by IAS according to IAS AC291.
- B. Testing Agency Qualifications:
 - 1. Independent firm specializing in performing testing and inspections of the type specified in this section.
 - 2. Accredited by IAS according to IAS AC89.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 SCHEDULE OF SPECIAL INSPECTIONS, GENERAL

- A. Frequency of Special Inspections: Special Inspections are indicated as continuous or periodic.
 - 1. Continuous Special Inspection: Special Inspection Agency is required to be present in the area where the work is being performed and observe the work at all times the work is in progress.
 - 2. Periodic Special Inspection: Special Inspection Agency is required to be present in the area where work is being performed and observe the work part-time or intermittently and at the completion of the work.

3.2 SPECIAL INSPECTIONS REQUIRED

- A. Refer to Special Inspections requirements as indicated on Drawings.

3.3 OWNER DUTIES AND RESPONSIBILITIES

- A. The Owner recognizes his or her obligation to ensure that the construction complies with the approved permit documents and to implement this program of special inspections. In partial fulfillment of these obligations, the Owner will retain and directly pay for the Special Inspections as required in IBC Section 1704.2.

3.4 SPECIAL INSPECTION AGENCY DUTIES AND RESPONSIBILITIES

- A. Special Inspection Agency shall:
1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 2. Perform specified sampling and testing of products in accordance with specified reference standards.
 3. Ascertain compliance of materials and products with requirements of Contract Documents.
 4. Promptly notify Architect and Contractor of observed irregularities or non-compliance of work or products.
 5. Perform additional tests and inspections required by Architect.
 6. Attend preconstruction meetings and progress meetings.
 7. Submit reports of all tests or inspections specified.
- B. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.
- C. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.5 TESTING AGENCY DUTIES AND RESPONSIBILITIES

- A. Testing Agency Duties:
1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 2. Perform specified sampling and testing of products in accordance with specified standards.
 3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 4. Promptly notify Architect and Contractor of observed irregularities or non-compliance of work or products.
 5. Perform additional tests and inspections required by Architect.
 6. Submit reports of all tests or inspections specified.

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- B. Limits on Testing or Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency may not approve or accept any portion of the work.
 - 3. Agency may not assume any duties of Contractor.
 - 4. Agency has no authority to stop the work.
- C. On instructions by Architect, perform re-testing required because of non-compliance with specified requirements, using the same agency.
- D. Contractor will pay for re-testing required because of non-compliance with specified requirements.

3.6 CONTRACTOR DUTIES AND RESPONSIBILITIES

- A. Contractor Responsibilities, General:
 - 1. Deliver to agency at designated location, adequate samples of materials for special inspections that require material verification.
 - 2. Cooperate with agency and laboratory personnel; provide access to approved documents at project site, to the work, to manufacturers' facilities, and to fabricators' facilities.
 - 3. Provide incidental labor and facilities:
 - a. To provide access to work to be tested or inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested or inspected.
 - c. To facilitate tests or inspections.
 - d. To provide storage and curing of test samples.
 - 4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing or inspection services.
 - 5. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

END OF SECTION

SECTION 01 5000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Temporary utilities.
- B. Temporary telecommunications services.
- C. Temporary sanitary facilities.
- D. Temporary Controls: Barriers, enclosures, and fencing.
- E. Waste removal facilities and services.
- F. Project identification sign.
- G. Field offices.

1.2 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.
- B. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009.

1.3 TEMPORARY UTILITIES

- A. Provide and pay for all electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes.
- B. New permanent facilities may not be used.
- C. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.4 TELECOMMUNICATIONS SERVICES

- A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.
- B. Telecommunications services shall include:
 - 1. Windows-based personal computer dedicated to project telecommunications, with necessary software and laser printer.

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2. Internet Connections: Minimum of one; DSL modem or faster.
3. Email: Account/address reserved for project use.

1.5 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. New permanent facilities may not be used during construction operations.
- C. Maintain daily in clean and sanitary condition.

1.6 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
- C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.7 FENCING

- A. Construction: Commercial grade chain link fence.
- B. Provide 6 foot high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.8 EXTERIOR ENCLOSURES

- A. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

1.9 INTERIOR ENCLOSURES

- A. Provide temporary partitions and ceilings as indicated to separate work areas from Owner-occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to existing materials and equipment.

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- B. Construction: Framing and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces:
 - 1. STC rating of 35 in accordance with ASTM E90.
 - 2. Maximum flame spread rating of 75 in accordance with ASTM E84.
- C. Paint surfaces exposed to view from Owner-occupied areas.

1.10 VEHICULAR ACCESS AND PARKING

- A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
- B. Coordinate access and haul routes with governing authorities and Owner.
- C. Provide and maintain access to fire hydrants, free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering streets.
- E. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

1.11 WASTE REMOVAL

- A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- B. Provide containers with lids. Remove trash from site periodically.
- C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
- D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.12 PROJECT IDENTIFICATION

- A. Provide project identification sign of design and construction indicated on drawings.
- B. Erect on site at location established by Architect.
- C. No other signs are allowed without Owner permission except those required by law.

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1.13 FIELD OFFICES

- A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack, and drawing display table.
- B. Provide space for Project meetings, with table and chairs to accommodate 6 persons.
- C. Locate offices a minimum distance of 30 feet from existing and new structures.

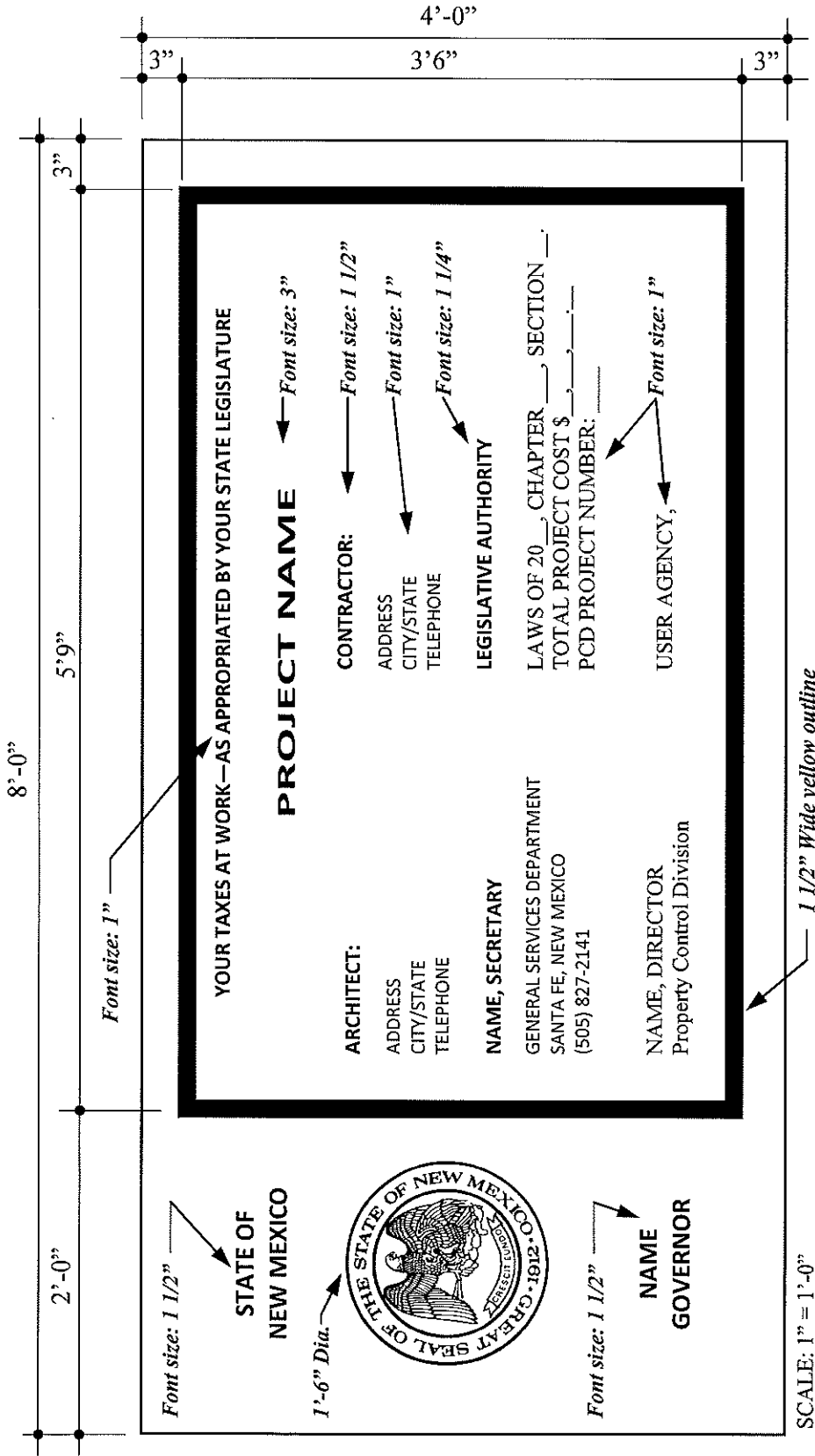
1.14 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.
- B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore new permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION



COLORS:

- Background—Red
- Letters and Line-work—Yellow
- Font:** Helvetica medium letter, except seal
- State Seal Shall be as shown (Electronic format available from Architect and Property Control Division)

PROJECT SIGN:

Contractor shall provide a sign on 3/4" medium density overlaid plywood 4 x 8 ft., mounted on 4 x 4 in. posts. Layout shall be per drawing above. The sign shall be prominently displayed at the project location from the date of work commences. Contractor shall be responsible for maintaining the sign for the duration of the project. Consult the Architect prior to Pre-construction Conference regarding content.

GSD / FACILITIES MANAGEMENT DIVISION PROJECT SIGN; YES NO

SECTION 01 6000 - PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. General product requirements.
- B. Transportation, handling, storage and protection.
- C. Product option requirements.
- D. Substitution limitations.
- E. Maintenance materials, including extra materials, spare parts, tools, and software.

1.2 RELATED REQUIREMENTS

- A. Section 01 2500 - Substitution Procedures: Substitutions made during procurement and/or construction phases.
- B. Section 01 4000 - Quality Requirements: Product quality monitoring.

1.3 REFERENCE STANDARDS

- A. ASTM D6866 - Standard Test Methods for Determining the Biobased Content of Solid, Liquid, and Gaseous Samples Using Radiocarbon Analysis; 2012.
- B. NEMA MG 1 - Motors and Generators; 2014.
- C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.4 SUBMITTALS

- A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

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1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.1 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by Contract Documents.
- B. Use of products having any of the following characteristics is not permitted:
 1. Containing lead, cadmium, or asbestos.
- C. Where other criteria are met, Contractor shall give preference to products that:
 1. If used on interior, have lower emissions, as defined in Section 01 6116.
 2. If wet-applied, have lower VOC content, as defined in Section 01 6116.

2.2 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.3 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.1 SUBSTITUTION LIMITATIONS

- A. See Section 01 2500 - Substitution Procedures.

3.2 TRANSPORTATION AND HANDLING

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.3 STORAGE AND PROTECTION

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- G. Comply with manufacturer's warranty conditions, if any.
- H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

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- I. Prevent contact with material that may cause corrosion, discoloration, or staining.
- J. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SECTION 01 7000 - EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Requirements for alterations work, including selective demolition.
- C. Pre-installation meetings.
- D. Cutting and patching.
- E. Surveying for laying out the work.
- F. Cleaning and protection.
- G. Starting of systems and equipment.
- H. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
- I. General requirements for maintenance service.

1.2 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.
- B. Section 01 3000 - Administrative Requirements: Submittals procedures, Electronic document submittal service.
- C. Section 01 5000 - Temporary Facilities and Controls: Temporary exterior enclosures.
- D. Section 01 5000 - Temporary Facilities and Controls: Temporary interior partitions.
- E. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance data, warranties, and bonds.
- F. Section 07 8400 - Firestopping.

1.3 REFERENCE STANDARDS

- A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

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1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
 - 1. On request, submit documentation verifying accuracy of survey work.
 - 2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in compliance with Contract Documents.
 - 3. Submit surveys and survey logs for the project record.
- C. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
 - 1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences. Include design drawings and calculations for bracing and shoring.
 - 2. Identify demolition firm and submit qualifications.
 - 3. Include a summary of safety procedures.
- D. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather exposed or moisture resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Owner or separate Contractor.
 - 6. Include in request:
 - a. Identification of Project.
 - b. Location and description of affected work.
 - c. Necessity for cutting or alteration.
 - d. Description of proposed work and products to be used.
 - e. Effect on work of Owner or separate Contractor.
 - f. Written permission of affected separate Contractor.
 - g. Date and time work will be executed.
- E. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.5 QUALIFICATIONS

- A. For surveying work, employ a land surveyor registered in the State in which the Project is located and acceptable to Architect. Submit evidence of surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate. Employ only individual(s) trained and experienced in collecting and recording accurate data relevant to ongoing construction activities,
- B. For design of temporary shoring and bracing, employ a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

1.6 PROJECT CONDITIONS

- A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.
- C. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- D. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
 - 1. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.
- E. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
 - 1. Minimize amount of bare soil exposed at one time.
 - 2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
 - 3. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
- F. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
- G. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
- H. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

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- I. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.7 COORDINATION

- A. See Section 01 1000 for occupancy-related requirements.
- B. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- C. Notify affected utility companies and comply with their requirements.
- D. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- E. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- G. Coordinate completion and clean-up of work of separate sections.
- H. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.1 PATCHING MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.2 PREPARATION

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

3.3 PREINSTALLATION MEETINGS

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Architect four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of examination, preparation and installation procedures.
 - 2. Review coordination with related work.

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- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.4 LAYING OUT THE WORK

- A. Verify locations of survey control points prior to starting work.
- B. Promptly notify Architect of any discrepancies discovered.
- C. Contractor shall locate and protect survey control and reference points.
- D. Control datum for survey is that indicated on drawings.
- E. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- F. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- G. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.
- H. Utilize recognized engineering survey practices.
- I. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
 - 1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
 - 2. Grid or axis for structures.
 - 3. Building foundation, column locations, ground floor elevations.
- J. Periodically verify layouts by same means.
- K. Maintain a complete and accurate log of control and survey work as it progresses.

3.5 GENERAL INSTALLATION REQUIREMENTS

- A. In addition to compliance with regulatory requirements, conduct construction operations in compliance with NFPA 241, including applicable recommendations in Appendix A.
- B. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- C. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

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- D. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- E. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- F. Make neat transitions between different surfaces, maintaining texture and appearance.

3.6 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 - 1. Verify that construction and utility arrangements are as indicated.
 - 2. Report discrepancies to Architect before disturbing existing installation.
 - 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Keep areas in which alterations are being conducted separated from other areas that are still occupied.
 - 1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 5000 in locations indicated on drawings.
- C. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove items indicated on drawings.
 - 2. Relocate items indicated on drawings.
 - 3. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
 - 4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- D. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove, relocate, and extend existing systems to accommodate new construction.
 - 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
 - 2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
 - 3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.

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- a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
 - b. Provide temporary connections as required to maintain existing systems in service.
 4. Verify that abandoned services serve only abandoned facilities.
 5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.
- E. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 3. Repair adjacent construction and finishes damaged during removal work.
- F. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
- G. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- H. Refinish existing surfaces as indicated:
1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
 2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
- I. Clean existing systems and equipment.
- J. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- K. Do not begin new construction in alterations areas before demolition is complete.
- L. Comply with all other applicable requirements of this section.

3.7 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. See Alterations article above for additional requirements.
- C. Perform whatever cutting and patching is necessary to:
 1. Complete the work.

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2. Fit products together to integrate with other work.
 3. Provide openings for penetration of mechanical, electrical, and other services.
 4. Match work that has been cut to adjacent work.
 5. Repair areas adjacent to cuts to required condition.
 6. Repair new work damaged by subsequent work.
 7. Remove samples of installed work for testing when requested.
 8. Remove and replace defective and non-complying work.
- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- E. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- F. Cut masonry or concrete materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- G. Restore work with new products in accordance with requirements of Contract Documents.
- H. Fit work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material, to full thickness of the penetrated element.
- J. Patching:
1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 2. Match color, texture, and appearance.
 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.8 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

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- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.9 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.10 SYSTEM STARTUP

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
- C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- D. Verify that wiring and support components for equipment are complete and tested.
- E. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
- F. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.11 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.
- B. Testing, adjusting, and balancing HVAC systems: See Section 23 0593 - Testing, Adjusting, and Balancing for HVAC.

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3.12 FINAL CLEANING

- A. Execute final cleaning after Substantial Completion but before making final application for payment.
- B. Use cleaning materials that are nonhazardous.
- C. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- F. Clean filters of operating equipment.
- G. Clean debris from roofs, scuppers, overflow drains, area drains, and drainage systems.
- H. Clean site; sweep paved areas, rake clean landscaped surfaces.
- I. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.13 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
- B. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.
- C. Submit written certification containing Contractor's Correction Punch List, 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 Substantial Completion inspection.
- D. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.
- E. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
- F. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.

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- G. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

3.14 MAINTENANCE

- A. Provide service and maintenance of components indicated in specification sections.
- B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.
- C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

SECTION 01 7800 - CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Project record documents.
- B. Operation and maintenance data.
- C. Warranties and bonds.

1.2 RELATED REQUIREMENTS

- A. Section 01 3000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- B. Individual Product Sections: Specific requirements for operation and maintenance data.
- C. Individual Product Sections: Warranties required for specific products or Work.

1.3 SUBMITTALS

- A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
- B. Operation and Maintenance Data:
 - 1. Submit preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
 - 2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
 - 3. Submit completed documents 15 days prior to final inspection. Documents will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
 - 4. Submit revised final documents in final form within 10 days after final inspection.
- C. Warranties and Bonds:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
 - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.

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3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 1. Drawings.
 2. Addenda.
 3. Change Orders and other modifications to the Contract.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Record Drawings: Legibly mark each item to record actual construction including:
 1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 3. Field changes of dimension and detail.
 4. Details not on original Contract drawings.

3.2 OPERATION AND MAINTENANCE DATA

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

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- D. **Typed Text:** As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.3 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. **For Each Product, Applied Material, and Finish:**
 - 1. Product data, with catalog number, size, composition, and color and texture designations.
 - 2. Information for re-ordering custom manufactured products.
- B. **Instructions for Care and Maintenance:** Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Additional information as specified in individual product specification sections.
- D. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.4 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. **For Each Item of Equipment and Each System:**
 - 1. Description of unit or system, and component parts.
 - 2. Identify function, normal operating characteristics, and limiting conditions.
 - 3. Include performance curves, with engineering data and tests.
 - 4. Complete nomenclature and model number of replaceable parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- C. **Panelboard Circuit Directories:** Provide electrical service characteristics, controls, and communications; typed.
- D. **Operating Procedures:** Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- E. **Maintenance Requirements:** Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- F. Provide servicing and lubrication schedule, and list of lubricants required.

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- G. Include manufacturer's printed operation and maintenance instructions.
- H. Include sequence of operation by controls manufacturer.
- I. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- J. Provide control diagrams by controls manufacturer as installed.
- K. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- L. Include test and balancing reports.
- M. Additional Requirements: As specified in individual product specification sections.

3.5 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

- A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- B. Assemble operation and maintenance manuals in electronic format (PDF) for Owner's personnel use, with data arranged as required for hard copy.
 - 1. Indexing: Electronic copy to contain book marks, hyperlinks, and other means of indexing as required. Format of indexing to match the format required for physical hard copy.
- C. Where systems involve more than one specification section, provide separate tabbed divider for each system.
- D. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- E. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- F. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.
- G. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
- H. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- I. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.

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- J. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- K. Arrangement of Contents: Organize each volume in parts as follows:
 - 1. Project Directory.
 - 2. Table of Contents, of all volumes, and of this volume.
 - 3. Operation and Maintenance Data: Arranged by system, then by product category.
 - a. Source data.
 - b. Operation and maintenance data.
 - c. Field quality control data.
 - d. Original warranties and bonds.

3.6 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.

END OF SECTION

SECTION 01 7900 - DEMONSTRATION AND TRAINING

PART 1 GENERAL

1.1 SUMMARY

- A. Demonstration of products and systems where indicated in specific specification sections.
- B. Training of Owner personnel in operation and maintenance is required for:
 - 1. All software-operated systems.
 - 2. HVAC systems and equipment.
 - 3. Electrical systems and equipment.
 - 4. Landscape irrigation.
 - 5. Items specified in individual product Sections.
- C. Training of Owner personnel in care, cleaning, maintenance, and repair is required for:
 - 1. Roofing, waterproofing, and other weather-exposed or moisture protection products.
 - 2. Finishes, including flooring, wall finishes, ceiling finishes.
 - 3. Fixtures and fittings.
 - 4. Items specified in individual product Sections.

1.2 RELATED REQUIREMENTS

- A. Section 01 7800 - Closeout Submittals: Operation and maintenance manuals.

1.3 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Training Plan: Owner will designate personnel to be trained; tailor training to needs and skill-level of attendees.
 - 1. Submit not less than four weeks prior to start of training.
 - 2. Revise and resubmit until acceptable.
 - 3. Provide an overall schedule showing all training sessions.
 - 4. Include at least the following for each training session:
 - a. Identification, date, time, and duration.
 - b. Description of products and/or systems to be covered.
 - c. Name of firm and person conducting training; include qualifications.

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- d. Intended audience, such as job description.
 - e. Objectives of training and suggested methods of ensuring adequate training.
 - f. Methods to be used, such as classroom lecture, live demonstrations, hands-on, etc.
 - g. Media to be used, such as slides, hand-outs, etc.
 - h. Training equipment required, such as projector, projection screen, etc., to be provided by Contractor.
- C. Training Manuals: Provide training manual for each attendee; allow for minimum of two attendees per training session.
- 1. Include applicable portion of O&M manuals.
 - 2. Include copies of all hand-outs, slides, overheads, video presentations, etc., that are not included in O&M manuals.
 - 3. Provide one extra copy of each training manual to be included with operation and maintenance data.
- D. Training Reports:
- 1. Identification of each training session, date, time, and duration.
 - 2. Sign-in sheet showing names and job titles of attendees.
 - 3. List of attendee questions and written answers given, including copies of and references to supporting documentation required for clarification; include answers to questions that could not be answered in original training session.
- E. Video Recordings: Submit digital video recording of each demonstration and training session for Owner's subsequent use.
- 1. Format: DVD Disc, or other agreed upon medium.
 - 2. Label each digital video recording and container with session identification and date.

1.4 QUALITY ASSURANCE

- A. Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of the relevant products and systems.
- 1. Provide as instructors the most qualified trainer of those contractors and/or installers who actually supplied and installed the systems and equipment.
 - 2. Where a single person is not familiar with all aspects, provide specialists with necessary qualifications.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 DEMONSTRATION - GENERAL

- A. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Owner.
- B. Demonstration may be combined with Owner personnel training if applicable.
- C. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.
 - 1. Perform demonstrations not less than two weeks prior to Substantial Completion.
 - 2. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- D. Non-Operating Products: Demonstrate cleaning, scheduled and preventive maintenance, and repair procedures.
 - 1. Perform demonstrations not less than two weeks prior to Substantial Completion.

3.2 TRAINING - GENERAL

- A. Conduct training on-site unless otherwise indicated.
- B. Owner will provide classroom and seating at no cost to Contractor.
- C. Provide training in minimum two hour segments.
- D. Training schedule will be subject to availability of Owner's personnel to be trained; re-schedule training sessions as required by Owner; once schedule has been approved by Owner failure to conduct sessions according to schedule will be cause for Owner to charge Contractor for personnel "show-up" time.
- E. Review of Facility Policy on Operation and Maintenance Data: During training discuss:
 - 1. The location of the O&M manuals and procedures for use and preservation; backup copies.
 - 2. Typical contents and organization of all manuals, including explanatory information, system narratives, and product specific information.
 - 3. Typical uses of the O&M manuals.
- F. Product- and System-Specific Training:

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1. Review the applicable O&M manuals.
 2. For systems, provide an overview of system operation, design parameters and constraints, and operational strategies.
 3. Review instructions for proper operation in all modes, including start-up, shut-down, seasonal changeover and emergency procedures, and for maintenance, including preventative maintenance.
 4. Provide hands-on training on all operational modes possible and preventive maintenance.
 5. Emphasize safe and proper operating requirements; discuss relevant health and safety issues and emergency procedures.
 6. Discuss common troubleshooting problems and solutions.
 7. Discuss any peculiarities of equipment installation or operation.
 8. Discuss warranties and guarantees, including procedures necessary to avoid voiding coverage.
 9. Review recommended tools and spare parts inventory suggestions of manufacturers.
 10. Review spare parts and tools required to be furnished by Contractor.
 11. Review spare parts suppliers and sources and procurement procedures.
- G. Be prepared to answer questions raised by training attendees; if unable to answer during training session, provide written response within three days.

END OF SECTION

SECTION 03 0516 - UNDERSLAB VAPOR RETARDER

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Sheet vapor retarder system for placement under concrete slabs-on-grade.

1.2 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Preparation of subgrade, granular fill, and placement of concrete.

1.3 REFERENCE STANDARDS

- A. ACI 302.2R-06 - Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials.
- B. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2011 (Reapproved 2017).
- C. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2017.

1.4 QUALITY ASSURANCE

- A. Pre-installation meeting:
 - 1. Convene a preinstallation meeting before start of installation of vapor retarder membrane. Require attendance of parties directly affecting work of this section, including Contractor, concrete Subcontractor, Architect, and installer. Review installation, protection, and coordination with other work.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products.
- C. Test Data: Submit report of tests showing compliance with specified requirements.
- D. Samples: Submit samples of underslab vapor retarder to be used.
- E. Manufacturer's Installation Instructions: Indicate installation procedures and interface required with adjacent construction.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage: Store materials in clean, dry area in accordance with manufacturer's instructions.
- C. Handling: Protect materials during handling and installation to prevent damage.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Underslab Vapor Retarder:
 - 1. Be manufactured from prime virgin resins.
 - 2. Water Vapor Permeance: Not more than 0.030 perms, maximum.
 - 3. Complying with ASTM E1745 Class A.
 - 4. Thickness: 10 mils, minimum.
 - 5. Basis of Design:
 - a. Stego Industries LLC; Stego Wrap Vapor Retarder (10-mil):
www.stegoindustries.com.
- B. Accessory Products: Vapor retarder manufacturer's recommended accessories for sealing seams and penetrations in vapor retarder.
 - 1. Seam tape: Four-inch (4") wide tape with a permeance rating matching that of the vapor retarder and approved by the vapor retarder manufacturer.
 - 2. Mastic: Mastic shall be approved by the vapor retarder manufacturer.
 - 3. Pipe Boots or Collars: Pipe boots or collars shall be fabricated in accordance with requirements of the vapor retarder manufacturer explicitly for use with the membrane being used for this project.
- C. Manufacturers:
 - 1. Manufacturers that provide material meeting the above specified include:
 - a. Fortifiber Corporation, Moistop Ultra 10.
 - b. Insulation Solutions, Viper Vaporcheck II.
 - c. Poly-America, HuskyYellow Guard.
 - d. Raven Industries, VaporBlock 10.
 - e. Reef Industries, Griffolyn 10 mil.
 - f. W.R. Meadows, Perminator.

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- g. Substitution from others will not be accepted.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surface over which vapor retarder is to be installed is complete and ready before proceeding with installation of vapor retarder.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install vapor retarder in accordance with manufacturer's instructions and ASTM E1643.
- B. Level and tamp or roll soil bearing surface.
- C. Place vapor retarder sheeting with the longest dimension parallel with the direction of concrete pour, completely covering the area where concrete slab will be placed.
- D. Install vapor retarder under interior slabs on grade; lap sheet over footings, seal to foundation walls, and seal around penetrations and columns in order to create a monolithic membrane between the surface of the slab and moisture sources below the slab and at the slab perimeter. The area of adhesion should be free from dust, dirt and moisture to allow maximum adhesion.
- E. Lap joints minimum 6 inches, or as recommended by the manufacturer.
- F. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions.

3.3 PROTECTION

- A. Take precautions to protect vapor retarder from damage during installation of reinforcing steel and utilities and during placement of concrete.
- B. Use only concrete brick type reinforcing bar supports, or provide 6 by 6 in. protective pads of asphaltic hardboard or other material recommended by the vapor retarder manufacturer to protect the vapor retarder from puncture.
- C. Avoid use of stakes driven through vapor retarder. If stakes must be used, do so only in strict conformance with manufacturer's recommendations for stake and pin penetration sealing.

3.4 REPAIR

- A. **IMPORTANT:** All penetrations must be sealed. All pipes, ducting, rebar and wire penetrations shall be sealed using boots, tape, mastic, and/or membrane as directed by the membrane manufacturer's instructions.
- B. Repair damaged vapor retarder before covering with other materials.
- C. Lap beyond damaged areas a minimum of 6 inches; clean all adhesion areas of dust, dirt and moisture; and seal as prescribed for sheet joints.

END OF SECTION

SECTION 03 3000 - CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Concrete formwork.
- B. Slabs on grade.
- C. Concrete foundation walls and pilasters.
- D. Concrete footings and tie beams.
- E. Concrete reinforcement.
- F. Joint devices associated with concrete work.
- G. Miscellaneous concrete elements, including equipment pads, light pole bases, and flagpole bases.
- H. Architectural site concrete, other than paving, sidewalks, curbs, and gutters.
- I. Concrete curing.
- J. Repairs to defective concrete.

1.2 RELATED REQUIREMENTS

- A. Division 01 Section - Special Requirements for Protection of Concrete Slabs.
- B. Section 03 0516 - Underslab Vapor Retarder.
- C. Section 03 3511 - Concrete Floor Finishes: Densifiers, hardeners, applied coatings, and polishing.
- D. Section 07 9200 - Joint Sealants: Products and installation for sealants and joint fillers for saw cut joints and isolation joints in slabs.
- E. Section 31 2323 - Fill: For fill under foundations and slabs-on-grade.
- F. Section 32 1313 - Concrete Paving: Sidewalks, paving, curbs, and gutters.
- G. Section 32 1316 - Decorative Concrete Paving.
- H. Additional requirements for concrete mix designs are shown on the project drawings.

1.3 REFERENCE STANDARDS

- A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; 2010 (Reapproved 2015).
- B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).
- C. ACI 301 - Specifications for Structural Concrete; 2016.
- D. ACI 302.1R - Guide to Concrete Floor and Slab Construction; 2015.
- E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).
- F. ACI 305R - Guide to Hot Weather Concreting; 2010.
- G. ACI 306R - Guide to Cold Weather Concreting; 2016.
- H. ACI 308R - Guide to External Curing of Concrete; 2016.
- I. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2014 (Errata 2017).
- J. ACI 347R - Guide to Formwork for Concrete; 2014.
- K. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2016.
- L. ASTM A706/A706M - Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement; 2016.
- M. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2017.
- N. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation; 2017.
- O. ASTM C1293 - Standard Test Method for Determination of Length Change of Concrete Due to Alkali-Silica Reaction; 2020a.
- P. ASTM C172/C172M - Standard Practice for Sampling Freshly Mixed Concrete; 2017.
- Q. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2016, with Editorial Revision (2016).
- R. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2018.

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- S. ASTM C595/C595M - Standard Specification for Blended Hydraulic Cements; 2020.
- T. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2017a.
- U. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2016a.
- V. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2015a.
- W. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.
- X. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete; 2016.
- Y. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2016.
- Z. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a (Reapproved 2016).
- AA. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2011.
- AB. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2017.
- AC. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2015.
- AD. ASTM C845/C845M - Standard Specification for Expansive Hydraulic Cement; 2012.
- AE. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete; 2015.
- AF. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete; 2016.
- AG. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 2013.
- AH. ASTM C1157/1157M - Standard Performance Specification for Hydraulic Cement.
- AI. ASTM C1260 - Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method); 2021.
- AJ. ASTM C1293 - Standard Test Method for Determination of Length Change of Concrete Due to Alkali-Silica Reaction.
- AK. ASTM C1567/C1567M - Standard Test Method for Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method)

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- AL. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2012.
- AM. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015e1.
- AN. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2017.
- AO. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2004, with Editorial Revision (2013).
- AP. ASTM D1752 - Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction; 2004a (Reapproved 2013).
- AQ. ASTM D2103 - Standard Specification for Polyethylene Film and Sheeting; 2015.
- AR. ASTM E1155 - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers; 2014.
- AS. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2018.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Qualification Data: For Installer, Manufacturer, and Testing Agency.
- C. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
 - 1. For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.
- D. Material test reports for aggregates.
 - 1. Include aggregate weathering property test reports.
 - 2. Include one or more of the following:
 - a. Signed statement that aggregate does not lead to alkali aggregate reactivity.
 - b. Include for each type of aggregate the results of mortar bar expansion testing per ASTM C1260.
 - c. Include for each type of aggregate the results of length change testing per ASTM C1293.
 - d. For aggregates combined with pozzolans exhibiting an alkali content less than 4.0% sodium oxide equivalent, include for each type of aggregate the results of mortar bar

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expansion testing per ASTM C1567. In addition, include for each type of aggregate the results of mortar bar expansion testing (with cement only) per ASTM C1260.

3. Include aggregate seive analysis plotted on .45 Power Curve.
- E. Material Certificates: For each of the following, signed by manufacturers:
1. Cementitious materials.
 2. Admixtures.
 3. Integral waterproofing admixture.
 4. Form materials and form-release agents.
 5. Steel reinforcement and accessories.
 6. Curing compounds
 7. Floor and slab treatments.
 8. Bonding agents.
 9. Adhesives.
 10. Semirigid joint filler.
 11. Joint-filler strips.
 12. Repair materials.
 13. Concrete curing covers.
- F. Mix Designs: Submit proposed concrete mix designs. Indicate intended use on each mix design cover sheet.
1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.
 2. Indicate whether or not proposed mix design permits any portion of water to be held out of the mix at the batch plant for addition in transit or at the project jobsite.
 3. Indicate proposed mix design complies with requirements of ACI 318, Chapter 5 - Concrete Quality, Mixing and Placing by one of the following:
 - a. Include a minimum of 30 test results from within the past 24 months and calculate the Sample Standard Deviation per ACI 318.
 - b. Provide mix design based on the 3-point curve method of ACI 318 by varying W/C ratio only. Submit appropriate mix with $F'_{cr} = F'_c + 1,200$ psi for concrete specified with F'_c less than or equal to 5,000 psi.
- G. Samples for Pigment Color Selection: Submit manufacturer's complete sample chip set, including pigment number and required dosage rate for each color.
- H. Steel Reinforcement Shop Drawings:
1. Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar

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arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

- I. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
 - 1. Location of construction joints is subject to approval of the Architect.
- J. Samples: Submit one, 12 inch long sample of construction joint devices and concrete curing covers..
- K. Test Reports: Submit report for each test or series of tests specified.
- L. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.
- M. Floor surface flatness and levelness measurements indicating compliance with specified tolerances.
- N. Field quality-control reports.
- O. Minutes of pre-installation conference.
- P. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

1.5 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 117, ACI 301, ACI 315, and ACI 318.
 - 1. Maintain one copy of each document on site.
- B. Follow recommendations of ACI 305R when concreting during hot weather.
- C. Follow recommendations of ACI 306R when concreting during cold weather.
- D. Conduct pre-installation conference at the project jobsite.
 - 1. Provide 7 days minimum notice to the Structural Engineer's Representative of the scheduled conference.
 - 2. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Ready-mix concrete manufacturer.
 - d. Concrete subcontractor.
 - e. Special concrete finish subcontractor.

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3. Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold- and hot-weather concreting procedures, curing procedures, construction of contraction and isolation joints, and joint filler strips, semirigid joint fillers, forms and form removal limitations, vapor retarder installation, anchor rod and anchorage device installation tolerances, steel reinforcement installation, floor and slab flatness and levelness measurement, concrete repair procedures, and concrete protection.
- E. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
- F. Qualifications:
1. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is ACI-certified Concrete Flatwork Technician.
 2. Manufacturer Qualifications: A firm experience in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.
 3. Manufacturer Certification: Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities".
 4. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C1077 and ASTM E329 for testing indicated.
 - a. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
 - b. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.
- G. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

1.6 **MOCK-UPS**

- A. Construct and erect mock-up panel for architectural concrete surfaces indicated to receive special treatment or finish as result of formwork.
 1. Panel Size: Sufficient to illustrate full range of treatment.
- B. Mockup panels shall be used to demonstrate typical joints, surface finish(es), texture, tolerances, floor treatments, and standard of workmanship.
- C. Accepted mock-up panel is considered basis of quality for the finished work. Keep mock-up exposed to view for duration of concrete work.

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- D. Approved mock-ups may not remain as part of the completed Work if undisturbed at time of substantial completion.

PART 2 PRODUCTS

2.1 FORMWORK

- A. Formwork Design and Construction: Comply with guidelines of ACI 347R to provide formwork that will produce concrete complying with tolerances of ACI 117.
- B. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
1. Form Facing for Non-Exposed Concrete: Contractor's choice of plywood, lumber, metal, or other approved material.
 2. Form Facing for Exposed Finish Concrete: Contractor's choice of material that will provide continuous, true, smooth, and stain-free final appearance. Furnish in largest practicable sizes to minimize number of joints.
 3. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that will produce surfaces with gradual or abrupt irregularities not exceeding formwork surface class A and which will not leave exposed "spiral" patterns on the finished surfaces. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.
 4. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
 - a. Formulate form-release agent with rust inhibitor for use in locations with steel form-facing materials.
 5. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic, Cone snap type. Furnish ties that will leave no metal within 1-1/2 inches of concrete surface, and that will leave holes no larger than 1 inches in diameter.
 6. Form Ties at Exposed to View Concrete: Factory-fabricated, glass-fiber-reinforced plastic, cut flush.
 - a. Submit color samples to Architect for approval.
 - b. For concrete to remain exposed to view, locate form-ties where indicated on drawings.
 7. Re-use of forms: At exposed conditions, re-use forms no more than two times.

2.2 REINFORCEMENT MATERIALS

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
1. Type: Deformed billet-steel bars.

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2. Finish: Unfinished, unless otherwise indicated.
- B. Reinforcing Steel: ASTM A706/A706M, Low-Alloy-Steel, Grade 60 (60,000 psi).
1. Type: Deformed billet-steel bars.
 2. Finish: Unfinished, unless otherwise indicated.
- C. Steel Welded Wire Reinforcement (WWR): Deformed type, ASTM A1064/A1064M.
1. Form: Flat Sheets.
 2. WWR Style: As indicated on drawings.
- D. Joint Dowel Bars: ASTM A615/A615M, Grade 60 (60,000 psi), plain-steel bars, cut true to length with ends square and free of burrs.
- E. Reinforcement Accessories:
1. Tie Wire: Annealed, minimum 16 gauge, 0.0508 inch.
 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
 3. Provide stainless steel, galvanized, plastic, or plastic coated steel components for placement within 1-1/2 inches of weathering surfaces.
- F. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.3 CONCRETE MATERIALS

- A. Cement: ASTM C150/C150M, Type I/II, grey, Portland type, low alkali as needed for ASR mitigation. Use only with approved pozzolan per ASTM C618.
1. Tricalcium Aluminate content: 8 percent maximum.
- B. Cement: ASTM C1157/C1157M, including the optional requirements for low reactivity with alkali-silica-reactive aggregates
1. Tricalcium Aluminate content: 8 percent maximum.
- C. Approved Products
1. Acquire cement for entire project from the same source.
- D. Normal Weight Aggregates: ASTM C33, Class 3S coarse aggregate or better, well-graded.
1. Acquire aggregates for entire project from same source.
 2. Provide fine aggregate free of materials with deleterious reactivity to alkali in cement.
- E. Fly Ash: ASTM C618, Class F.
- F. Calcined Pozzolan: ASTM C618, Class N.

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1. Approved Products:
 - a. MetaForce as manufactured by GCC.
 - b. MetaMax as manufactured by BASF.

- G. Color Additives: Pure, concentrated mineral pigments specifically intended for mixing into concrete and complying with ASTM C979/C979M.
 1. Concentration: Base dosage rates on weight of Portland cement, fly ash, silica fume, and other cementitious materials but not aggregate or sand.
 2. Packaging: If pigments are to be added to mix at site, furnish pigments in premeasured disintegrating bags to minimize job site waste.
 3. Color(s): As selected by Architect from manufacturer's full range.
 4. Products:
 - a. Basis of Design: Davis Colors; standard and custom options.

- H. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

2.4 ADMIXTURES

- A. Do not use chemicals that will result in soluble chloride ions in excess of 0.10 percent by weight of cement. Do not use calcium chloride or admixtures containing calcium chloride.
- B. Air Entrainment Admixture: ASTM C260/C260M.
- C. High Range Water Reducing and Retarding Admixture: ASTM C494/C494M Type G.
- D. High Range Water Reducing Admixture: ASTM C494/C494M Type F.
- E. Water Reducing and Accelerating Admixture: ASTM C494/C494M Type E.
- F. Water Reducing and Retarding Admixture: ASTM C494/C494M Type D.
- G. Accelerating Admixture: ASTM C494/C494M Type C.
- H. Retarding Admixture: ASTM C494/C494M Type B.
- I. Water Reducing Admixture: ASTM C494/C494M Type A.
- J. Plasticizing and Retarding Admixture: ASTM C1017/C1017M, Type II.
- K. Integral Hardening Admixture: Dry powder added to concrete during batching.
 1. Products:
 - a. Kryton International, Inc; HARD-CEM: www.kryton.com/#sle.

2.5 ACCESSORY MATERIALS

- A. Underslab Vapor Retarder: Refer to related Section 03 0516.
- B. Chamfer Strips: Wood, Metal, PVC, or Rubber strips, 3/4 by 3/4-inch, minimum.
- C. Rustication Strips: Wood, Metal, PVC, or Rubber, kerfed for ease of form removal.

2.6 BONDING AND JOINTING PRODUCTS

- A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059/C1059M, Type II.
- B. Epoxy Bonding System:
 - 1. Complying with ASTM C881/C881M, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:
 - a. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
- C. Reglets: Formed steel sheet, galvanized, with temporary filler to prevent intrusion of concrete or debris during placement.
 - 1. Size: As indicated on drawings.
- D. Dovetail Anchor Slots: Formed steel sheet, hot-dip galvanized, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.
- E. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.
 - 1. Material: ASTM D1751, cellulose fiber.
 - 2. Material: ASTM D1752 self-expanding cork (Type III).
- F. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, aromatic polyurea with a Type A shore durometer hardness range of 90 to 95 per ASTM D2240.
- G. Slab Construction Joint Devices: Combination keyed joint form and screed, galvanized steel, with rectangular or round knockout holes for conduit or rebar to pass through joint form at 6 inches on center; ribbed steel stakes for setting.
- H. Dowel Sleeves: Plastic sleeve for smooth, round, steel load-transfer dowels.
- I. Building Paper for use as bond-breaker strips: ASTM D226/D226M, Type I asphalt felt.

2.7 CURING MATERIALS

- A. Evaporation Reducer: Waterborne, Liquid thin-film-forming compound that reduces rapid moisture loss caused by high temperature, low humidity, and high winds; intended for application immediately after concrete placement.
- B. Curing Compound, Naturally Dissipating: Clear, water-based, liquid membrane-forming compound; complying with ASTM C309, Type 1, Class B.
 - 1. Not permitted for use at interior slabs-on-grade.
- C. Curing Compound, Non-dissipating: Liquid, membrane-forming, clear, non-yellowing acrylic; complying with ASTM C309, Type 1, Class B.
 - 1. Not permitted for use at interior slabs-on-grade.
 - 2. Vehicle: Water-based.
 - 3. VOC Content: Less than 200 g/L.
- D. Moisture-Retaining Sheet: ASTM C171.
 - 1. Other fabric-coated polyethylene sheet material specifically complying with ASTM C171.
 - a. Acceptable products:
 - 1) PNA Construction Technologies Hydracure blankets.
 - 2) Approved Equal.
 - 2. Required for use at all interior slabs-on-grade.
 - 3. Shall be non-staining, non-marking or ghosting type.
- E. Water: Potable, not detrimental to concrete.

2.8 REPAIR MATERIALS

- A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8-inch and that can be feathered at edges to match adjacent floor elevations.
 - 1. Cement Binder: ASTM C150/C150M, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C219.
 - 2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
 - 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4-inch or coarse sand as recommended by underlayment manufacturer.
 - 4. Compressive Strength: Not less than 4,100 psi at 28 days when tested according to ASTM C109/C109M.

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- B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4-inch and that can be filled in over a scarified surface to match adjacent floor elevations.
1. Cement Binder: ASTM C150/C150M, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C219.
 2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4-inch or coarse sand as recommended by topping manufacturer.
 4. Compressive Strength: Not less than 5,000 psi at 28 days when tested according to ASTM C109/C109M.

2.9 CONCRETE MIX DESIGN

- A. Refer to drawings for required properties of all mix designs including 28-day strength, maximum water/cement ratio, maximum aggregate size, slump range, and air entrainment requirements for each type of concrete to be used. . Slump range indicated shall be prior to addition of plasticizing or water reducing admixtures.
- B. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
1. Cementitious Materials: Use fly ash and pozzolan in combination as needed to reduce the total amount of portland cement, which would otherwise be used. Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
 - a. Class F Fly Ash: 25 percent maximum; 20 percent minimum.
 - b. Class N Pozzolan: 15 percent maximum.
- C. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
1. For trial mixtures method, employ independent testing agency acceptable to Architect and Engineer of Record for preparing and reporting proposed mix designs.
- D. Limit water-soluble, chloride-ion content in hardened concrete to 0.30 percent by weight of cement.
- E. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.
1. Use water-reducing, high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

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4. Use Viscosity Modifying Admixture, where required, to prevent segregation of aggregates.
5. Use corrosion-inhibiting admixture in concrete mixtures where indicated.
6. Use compatible admixtures from one manufacturer.

2.10 MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C94/C94M, and furnish batch ticket information.
 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.
 2. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity of water to be held out of mix for addition at jobsite per approved mix design, and quantity. Record approximate location of final deposit in structure.
- B. Colored Concrete: Add pigments in strict accordance with manufacturer's instructions to achieve color that is consistent with approved mockup, and consistent from batch to batch.
- C. Transit Mixers: Comply with ASTM C94/C94M.
- D. Adding water: Water may be added as required for workability up to the amount allowed and shown on the mix design and batch ticket. Do not exceed maximum permissible slump. Do not add water after adding high-range water reducing admixtures to the concrete.

PART 3 EXECUTION

3.1 DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

3.2 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.3 FORMWORK AND PREPARATION

- A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.

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- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
 - 1. Class A, 1/8-inch for smooth-formed finished surfaces.
 - 2. Class B, 1/4-inch for rough-formed finished surfaces.
- D. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 - 1. Install keyways, reglets, recesses, and the like, for easy removal.
 - 2. Verify that forms are clean and free of rust before applying release agent.
- E. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- F. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- G. Chamfer exterior corners and edges of permanently exposed concrete.
- H. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- I. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- J. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.
- K. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- L. At exposed wall conditions, use 4 foot by 8 foot minimum nominal panel sizes, with no panel dimension less than 2 feet used. Unless shown otherwise on drawings, space ties 16-inches on center each way, 8-inches from form panel edges unless formwork design pressures require more frequent spacing. Coordinate closer spacing of ties, if required, with architect.
- M. Joints: Construct joints true to line with faces perpendicular to surface plane of concrete.
 - 1. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

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- a. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
 - b. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
 - c. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
2. Doweled Joints: Install dowel bars and support assemblies at joints as indicated on drawings.
- a. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint, where indicated on drawings.
- N. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in accordance with bonding agent manufacturer's instructions.
1. Use epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.
 2. Use latex bonding agent only for non-load-bearing applications.
- O. Vapor Retarder Installation: Under all slabs-on-grade; refer to related Section 03 0516.

3.4 REMOVING AND REUSING FORMS

- A. General: Formwork for sides of beams, walls, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.
- D. Do not re-use forms more than two times (total of 3 uses) at exposed conditions.

3.5 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

- A. Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
- B. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.

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1. Do not tack weld crossing reinforcing bars.
- C. Install welded wire reinforcement in maximum possible lengths. Lap edges of adjoining sheets at least one mesh spacing, and offset laps in both directions. Splice laps with tie wire.
- D. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.
1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."
 2. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
 3. Install dovetail anchor slots in concrete structures as indicated.

3.6 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
1. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
 2. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
 3. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
 4. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- B. Place concrete for floor slabs in accordance with ACI 302.1R.
1. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
 2. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 3. Maintain reinforcement in position on chairs during concrete placement.
 4. Screed slab surfaces with a straightedge and strike off to correct elevations.
 5. Slope surfaces uniformly to drains where required.

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6. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
- C. Notify Architect not less than 24 hours prior to commencement of placement operations.
 - D. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
 - E. Ensure reinforcement, inserts, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.
 - F. Before final test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301 and only up to the amount allowed in the approved mix design and printed on the batch ticket. No water shall be added at project site if not indicated in writing in the mix design and on the batch ticket.
 1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
 - G. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.
 - H. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.
 - I. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
 - J. Hot-Weather Placement: Comply with ACI 301 and as follows:
 1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas

3.7 SLAB JOINTING

- A. Locate joints as indicated on drawings.
- B. Anchor joint fillers and devices to prevent movement during concrete placement. Install joint filler strips in lengths as long as practicable.
- C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
 - 1. Install wherever necessary to separate slab from other building members, including columns, pedestals, walls, equipment foundations, footings, sumps, and drains.
- D. Sawcut Contraction Joints: Saw cut joints with early-entry equipment, as soon as possible after concrete placement, when cutting action will not tear, abrade or otherwise damage slab surface and before concrete develops random contraction cracks and as soon as slab can support the weight of saws and operators. See Contract Documents for cut size requirements.
- E. Construction Joints: Use doweled assembly as indicated on drawings.

3.8 FLOOR FLATNESS AND LEVELNESS TOLERANCES

- A. An independent testing agency, as specified in Section 01 4000, will inspect finished slabs for compliance with specified tolerances.
- B. Minimum F(F) Floor Flatness and F(L) Floor Levelness Values:
 - 1. Polished-Exposed Slabs: F(F) of 50; F(L) of 35.
 - a. Minimum Local Values: F(F) of 30; F(L) of 20.
 - 2. Under Thick-Bed Tile: F(F) of 20; F(L) of 15.
 - 3. Under Carpeting: F(F) of 25; F(L) of 20.
 - 4. Under Thin Resilient Flooring and Thinset Tile: F(F) of 35; F(L) of 25.
- C. Measure F(F) Floor Flatness and F(L) Floor Levelness in accordance with ASTM E1155 (ASTM E1155M), within 48 hours after slab installation; report both composite overall values and local values for each measured section.
- D. Correct the slab surface if composite overall value is less than specified and if local value is less than two-thirds of specified value, or less than F(F) of 13; F(L) of 10.
- E. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.9 CONCRETE FINISHING

- A. Repair surface defects, including tie holes, immediately after removing formwork.
- B. Unexposed Form Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Rub down or chip off fins or other raised areas 1/4 inch or more in height.
- C. Exposed Form Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Rub down or chip off and smooth fins or other raised areas 1/8 inch or more in height.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.
- E. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
 - 1. Scratch Finish: all surfaces to receive concrete floor toppings and to receive mortar setting beds for bonded cementitious floor finishes
 - a. While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in one direction.
 - 2. "Wood float" finish as described in ACI 302.1R; all surfaces to receive thick floor coverings including quarry tile, ceramic tile, and terrazzo with full bed setting system.
 - a. Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.
 - 3. "Steel trowel" finish as described in ACI 302.1R; all surfaces to receive thin floor coverings including carpeting, resilient flooring, seamless flooring, thin set quarry tile, thin set ceramic tile, and thin set ceramic tile.
 - a. After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 - b. The trowel finish shall be hard-steel trowel (3 passes), no burn marks. Finish to ACI 302.1R Class 5 Floor.
 - 4. Decorative Exposed Surfaces: Trowel as described in ACI 302.1R; take measures necessary to avoid black-burnish marks; decorative exposed surfaces include surfaces to be stained or dyed, pigmented concrete, and surfaces to be polished.
 - a. At polished concrete floors, walk-behind trowel machines will not be permitted unless specifically approved by the Architect. Ride-on trowel machines must be used

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to eliminate the telegraphing of footprints caused when using a walk-behind machine.

- b. See Concrete Floor Finishes specification 03 3511 for further information on the polished concrete finish.
5. Architectural Concrete Finish: Match Architect's design reference sample, identified and described as indicated, to satisfaction of Architect.
6. Broom Finish: Exterior concrete platforms, steps, ramps, and elsewhere as indicated.
 - a. Float finish and immediately after, apply broom finish. Slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.
7. Other Surfaces to Be Left Exposed: Trowel as described in ACI 302.1R, minimizing burnish marks and other appearance defects.

3.10 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.
- B. Equipment Bases, Housekeeping Pads, and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.

3.11 CURING AND PROTECTION

- A. Protect cured slabs from re-wetting, chemical contamination, and saturation.
- B. Do not permit traffic over unprotected concrete floor surface until fully cured.
- C. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- D. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
 1. Normal concrete: Not less than seven days.
- E. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- F. Formed Surfaces:

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1. Cure by moist curing, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

G. Unformed Surfaces:

1. Moisture Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than seven days by water ponding, water-fog spray, or saturated burlap.
 - a. Ponding: Maintain 100 percent coverage of water over floor slab areas, continuously for 7 days.
 - b. Spraying: Spray water over floor slab areas and maintain wet.
2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - a. Moisture-Retaining Sheet: Lap strips not less than 3 inches and seal with waterproof tape or adhesive; secure at edges.
 - b. Moisture-retaining-cover curing method must be used to cure slabs-on-grade which have been poured directly over vapor retarder membranes.
3. Curing Compound: Apply in two coats at right angles, in a continuous operation, using application rate recommended by manufacturer. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - a. Curing compounds are not permitted for use at interior slabs-on-grade. See above permitted options.
 - b. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.

3.12 JOINT FILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
 1. Defer joint filling until concrete has aged at least one month. Do not fill joints until construction traffic has permanently ceased.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.
- C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening

3.13 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field quality control tests and inspections, and prepare test reports as specified in Section 01 4000 - Quality Requirements.
1. Specific Special Inspection requirements are listed on the drawings.
 2. Test Results: The testing agency shall report test results in writing to the Architect, Concrete Manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.
- C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
- D. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C172/C172M shall be performed according to the following requirements:
1. Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.
 2. Compressive Strength Tests: ASTM C39/C39M. For each test, mold and laboratory-cure three sets of two concrete test cylinders each. Test one set of specimens at 7 days, and test one set of specimens at 28 days. Reserve the third set for later testing if required. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated. Obtain test samples for every 50 cubic yards or less of each class of concrete placed each day.
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 - b. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
 - c. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
 3. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.
 4. Air Content: ASTM C231/C231M, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

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5. Concrete Temperature: ASTM C1064/C1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
6. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
7. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42/C42M or by other methods as directed by Architect.

3.14 DEFECTIVE CONCRETE

- A. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.
- B. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

3.15 CONCRETE SURFACE REPAIRS

- A. Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
 1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2-inch in any dimension to solid concrete. Limit cut depth to 3/4-inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
 2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match

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- before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.
- D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01-inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
 2. After concrete has cured at least 14 days, correct high areas by grinding.
 3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
 4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
 5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4-inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 6. Repair defective areas, except random cracks and single holes 1-inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
 7. Repair random cracks and single holes 1-inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.
- F. Repair materials and installation not specified above may be used, subject to Architect's approval.

END OF SECTION

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SECTION 03 3511 - CONCRETE FLOOR FINISHES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Surface treatments for concrete floors and slabs.
- B. Clear coatings.
- C. Clear penetrating sealers.
- D. Polished concrete.

1.2 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Finishing of concrete surface to tolerance; floating, troweling, and similar operations; curing.
- B. Section 03 3000 - Cast-in-Place Concrete: Curing compounds that also function as sealers.

1.3 REFERENCE STANDARDS

- A. ASTM D523 - Standard Test Method for Specular Gloss; 2014 (Reapproved 2018).

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with concrete floor placement and concrete floor curing.
- B. Preinstallation Meetings: Conduct a preinstallation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.
 - 1. Environmental requirements.
 - 2. Scheduling and phasing of work.
 - 3. Coordinating with other work and personnel.
 - 4. Protection of adjacent surfaces.
 - 5. Surface preparation.
 - 6. Repair of defects and defective work prior to installation.
 - 7. Cleaning.
 - 8. Installation of polished floor finishes.
 - 9. Application of liquid hardener, densifier.
 - 10. Protection of finished surfaces after installation.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate information on shop drawings as follows:
 - 1. Typical layout including dimensions and floor grinding schedule.
 - 2. Plan view of floor and joint pattern layout.
 - 3. Areas to receive colored surface treatment.
 - 4. Indicate hardener, sealer, densifier in notes.
- C. Product Data: Manufacturer's published data on each finishing product, including information on compatibility of different products and limitations.
 - 1. Preparation and concrete grinding procedures.
 - 2. Colored concrete surface, dye selection guides.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 7000 - Execution and Closeout Requirements, for additional provisions.
- E. Maintenance Data:
 - 1. Operation and maintenance data for installed products in accordance with Section 01 7800 - Closeout Submittals.
 - 2. Provide data on maintenance and renewal of applied finishes.
 - 3. Protocols and product specifications for joint filing, crack repair and/or surface repair.
- F. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties as cited in Performance Requirements.
- G. Certificates:
 - 1. Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
 - 2. Current contractor's certificate signed by manufacturer declaring contractor as an approved installer of sodium silicate polishing system.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than ten years of documented experience.
- B. Installer Qualifications: Company specializing in resilient flooring installation, with minimum of five years of documented experience.

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1.7 MOCK-UP

- A. For coatings, construct mock-up area under conditions similar to those that will exist during application, with coatings applied.
- B. Mock-Up Size: 10 feet square (100 square feet), minimum, for each scheduled color and sheen for new construction and for each type of substrate to be polished.
- C. Locate where directed.
- D. Perform ASTM D523 Standard Test Method and provide printed results to architect prior to commencement of work.
- E. Allow 24 hours for inspection of mock-up before proceeding with work.
- F. Accepted mock-up may not remain as part of the work and must remain visible until all work is complete.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's sealed packaging, including application instructions.
- B. Storage and Protection:
 - 1. Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 - 2. Protect concrete slab.

1.9 FIELD CONDITIONS

- A. Comply with manufacturer's written recommendations.
- B. Maintain light level equivalent to a minimum 200 W light source at 8 feet above the floor surface over each 20 foot square area of floor being finished.
- C. Do not finish floors until interior heating system is operational.
- D. Maintain ambient temperature of 50 degrees F minimum.

1.10 WARRANTY

- A. Project Warranty: Refer to Contract Conditions for project warranty provisions.
- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and does not limit, other rights Owner may have under Contract Documents.

- C. Warranty: Commencing on date of substantial completion.

PART 2 PRODUCTS

2.1 CONCRETE FLOOR FINISH APPLICATIONS

- A. Unless otherwise indicated, all concrete floors are to be finished using polished concrete finish.
- B. Penetrating Clear Sealer:
 - 1. Use at following locations: As indicated on drawings.
- C. Clear Coating:
- D. Polished Finish:
 - 1. Use at following locations: As indicated on drawings.

2.2 PRODUCTS / SYSTEMS

- A. Hardener, Sealer, Densifier: Water based, odorless liquid, VOC compliant, environmentally safe chemical hardening solution leaving no surface film. Sodium silicate designed specifically to be used in conjunction with concrete polishing. No silicate hardener will be accepted.
- B. Joint Filler: Semi-rigid, 2-component, self-leveling, 100% solids, rapid curing, control joint and crack filler with Shore A 80 or higher hardness.
- C. Oil Repellent Sealer: Penetrating concrete sealer with no topical characteristics.
- D. Cleaning Solution: Mild, highly concentrated liquid concrete cleaner and conditioner; biodegradable, and environmentally safe. Cleaner must be ph neutral.
- E. Color: As shown on Drawings.
- F. Aggregate Exposure:
 - 1. Class D Large Aggregate.

2.3 COATINGS

- A. High Gloss Clear Coating: Transparent, nonyellowing, acrylic polymer-based coating.
 - 1. Composition: Solvent-based.
- B. Penetrating Sealer: Transparent, nonyellowing, water-based coating.
 - 1. Products:
 - a. Ameripolish, Inc; 3D SP Concrete Sealer: www.ameripolish.com/#sle

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- b. Ameripolish, Inc; SR2 WB Concrete Sealer: www.ameripolish.com/#sle
- c. Clemons Concrete Coatings; Super Seal M: www.clemonsconcretecoatings.com/#sle
- d. SureCrete Design Products; Siloxane Dye: www.surecretedesign.com/#sle
- e. Substitutions: See Section 01 6000 - Product Requirements.

2.4 POLISHED CONCRETE SYSTEM

- A. Polished Concrete System: Materials, equipment, and procedures designed and furnished by a single manufacturer to produce dense polished concrete of the specified sheen.
 - 1. Acceptable Systems:
 - a. Euclid Chemical Company; DOUBLE DIAMOND POLISHED CONCRETE FLOOR SYSTEMS: www.euclidchemical.com/#sle.
 - b. PROSOCO, Inc; Consolideck Polished Concrete System: www.prosoco.com/consolideck/#sle.
 - c. W. R. Meadows, Inc; Induroshine and Bellatrix Concrete Enhancer: www.wrmeadows.com/sle.
 - d. Substitutions: See Section 01 6000 - Product Requirements.

2.5 PERFORMANCE REQUIREMENTS

- A. Provide polished flooring that has been selected, manufactured and installed to achieve the following:
 - 1. Abrasion Resistance: ASTM C779, Method A, high resistance, no more than 0.008 inch (0.20 mm) wear in 30 minutes.
 - 2. Reflectivity: ASTM D523, Specular gloss in accordance with architect's required gloss unit (GU) reading.
 - 3. High Traction Rating: NFSI 101-A, non-slip properties.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that floor surfaces are acceptable to receive the work of this section.
- B. Verify that flaws in concrete have been patched and joints filled with methods and materials suitable for further finishes.
 - 1. Verify concrete has achieved specified design strength.
 - 2. Verify concrete surfaces received a hard steel-trowel finish (3 passes) during placement.

3.2 GENERAL

- A. Apply materials in accordance with manufacturer's instructions.

3.3 PREPARATION

- A. Ensure surfaces are clean and free of dirt and other foreign matter harmful to performance of concrete finishing materials.
- B. Examine surface to determine soundness of concrete for polishing.
- C. Remove surface contamination.

3.4 INSTALLATION

- A. Sequence of Polishing:
 - 1. Apply densifier prior to polishing.
 - 2. Perform metal bond grinding steps after partition studs are erected, but before gypsum board is installed.
 - 3. Perform resin bond polishing steps after partition studs are erected, but before gypsum board is installed.
- B. Floor Surface Polishing and Treatment:
 - 1. Provide polished concrete floor treatment in entirety of slab indicated by drawings. Provide consistent finish in all contiguous areas.
 - 2. Apply floor finish prior to installation of fixtures and accessories.
 - 3. Diamond polish concrete floor surfaces with planetary grinding machine with a minimum head pressure of 600 lbs (3-4 headed machine). Sequence with coarse to fine grit.
 - a. Comply with manufacturer's recommended polishing grits for each sequence to achieve desired finish level. Level of sheen shall match that of approved mock-up.
 - b. Expose aggregate in concrete surface as determined by approved mock-up.
 - c. All concrete surfaces shall be as uniform in appearance as possible with no visible scratches anywhere in surface.
 - 4. Grind and polish edges to a maximum of 1/8 inch of walls to match field area of floor.
 - 5. Edge into corners with a maximum size of 5 inch diameter grinding and polishing discs.
 - 6. Apply silicate densifier/hardener per manufacturer's specifications
 - 7. Remove defects and re-polish defective areas.
 - 8. Finish edges of floor finish adjoining other materials in a clean and sharp manner
- C. Concrete Sealer:

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1. No topical sealer allowed.
 2. The appearance of any streaking or swirling from the use of topical sealing products will not be accepted. Identification of such issues will require the surface be ground off and re-polished.
- D. Dyed and Polished Concrete:
1. Locate demarcation line between dyed surfaces and other finishes. Architect to provide AutoCAD compatible digital drawing file for floor design.
 2. Apply a minimum of two (2) coats. Clean with acetone between each coat.
 3. Apply dye per manufacturer's specifications

3.5 COATING APPLICATION

- A. Verify that surface is free of previous coatings, sealers, curing compounds, water repellents, laitance, efflorescence, fats, oils, grease, wax, soluble salts, residues from cleaning agents, and other impediments to adhesion.
- B. Protect adjacent non-coated areas from drips, overflow, and overspray; immediately remove excess material.
- C. Apply coatings in accordance with manufacturer's instructions, matching approved mock-ups for color, special effects, sealing and workmanship.

3.6 CONCRETE POLISHING

- A. Grind floors as required to achieve a class C aggregate exposure.
- B. Execute using materials, equipment, and procedures specified by manufacturer, using manufacturer approved installer.
 1. Final Polished Sheen: Semigloss finish; other sheens are included as comparison to illustrate required sheen; final sheen is before addition of any sealer or coating, regardless of whether that is also specified or not.
 2. Semi-Gloss Finish: Reflecting overhead and side images from 35 to 45 feet away.
- C. Protect finished surface as required and as recommended by manufacturer of polishing system.

3.7 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Test installed floor finish in accordance with ASTM D523 test method. Provide printed results to Architect, General Contractor, and Owner within 24 hours of completion. A minimum of 10 samples must be taken from each section of project to obtain an accurate average. Minimum will be no less than 85% of specified finish for any single test. Semi-gloss, 45 GU @ 60°.

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3.8 CLEANING

- A. Cleanup in accordance with Section 01 7000 - Execution and Closeout Requirements.
- B. Clean in accordance with manufacturer's written instructions.

3.9 PROTECTION

- A. Provide adequate protection to prevent any damage to the finished floor.
- B. Do not store materials on the floor surfaces to receive the work of this section for extended periods of time.
- C. Avoid exposure of finished floor to Food, Beverages, Oil, Glass, Metal, Paint, Caulk, or Primers.
- D. Immediately following polishing, cover floor with vapor barrier and impact protection to protect against any spills, flooding, impact, metal, or any other potentially damaging occurrence. Keep floor dry once polishing is complete.
- E. Protect from petroleum stains during construction.
- F. Diaper hydraulic power equipment.
- G. Restrict vehicular parking.
- H. Restrict use of pipe cutting machinery.
- I. Restrict placement of reinforcing steel on slab.
- J. Restrict use of acids or acidic detergents on slab.

END OF SECTION

SECTION 04 2000 - UNIT MASONRY

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Concrete masonry units.
- B. Mortar and grout.
- C. Reinforcement and anchorage.
- D. Accessories.

1.2 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Installation of reinforcing dowels in footings.
- B. Section 05 1200 - Structural Steel Framing: For anchoring and embedded items in masonry for connections to structural steel members and metal fabrications.
- C. Section 05 5000 - Metal Fabrications: Fabricated steel items.
- D. Section 07 9200 - Joint Sealants: Sealing control and expansion joints.

1.3 REFERENCE STANDARDS

- A. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold Finished; 2013.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- C. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2014.
- D. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts; 2007a (Reapproved 2014).
- E. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2016.
- F. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2009a (Reapproved 2014).
- G. ASTM A951/A951M - Standard Specification for Steel Wire for Masonry Joint Reinforcement; 2016.

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- H. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2017.
- I. ASTM C1019 - Standard Test Method for Sampling and Testing Grout; 2013.
- J. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2016a.
- K. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2015a, with Editorial Revision (2016).
- L. ASTM C1148 - Standard Test Method for Measuring the Drying Shrinkage of Masonry Mortar; 1992a (Reapproved 2008)(Withdrawn 2019).
- M. ASTM C1148 - Standard Test Method for Measuring the Drying Shrinkage of Masonry Mortar; 1992a (Reapproved 2014).
- N. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2015a.
- O. ASTM C1506 - Standard Test Method for Water Retention of Hydraulic Cement-Based Mortars and Plasters; 2017.
- P. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2017.
- Q. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units; 2016a.
- R. ASTM C91/C91M - Standard Specification for Masonry Cement; 2012.
- S. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units; 2017.
- T. ASTM C140/C140M - Standard Test Methods of Sampling and Testing Concrete Masonry Units and Related Units; 2017a.
- U. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2017.
- V. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.
- W. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2006 (Reapproved 2011).
- X. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2014a.
- Y. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2011.
- Z. ASTM C476 - Standard Specification for Grout for Masonry; 2018.
- AA. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry; 2018a.

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- AB. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete; 2016.
- AC. ASTM C1072 - Standard Test Method for Measurement of Masonry Flexural Bond Strength; 2013, with Editorial Revision (2014).
- AD. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms; 2016.
- AE. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry; 2016.
- AF. ASTM D1056 - Standard Specification for Flexible Cellular Materials--Sponge or Expanded Rubber; 2014.
- AG. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2017.
- AH. ASTM D2287 - Standard Classification System and Basis for Specification for Nonrigid Vinyl Chloride Polymer and Copolymer Molding and Extrusion Compounds; 2019.
- AI. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2020.
- AJ. ASTM E514/E514M - Standard Test Method for Water Penetration and Leakage Through Masonry; 2014a.
- AK. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing; 2017.
- AL. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2016.

1.4 PERFORMANCE REQUIREMENTS

- A. Provide structural unit masonry that develops indicated net-area compressive strengths at 28 days.
 - 1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to Tables 1 and 2 in TMS 602.

1.5 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Owner will engage a qualified independent testing agency to perform preconstruction testing indicated below. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.
 - 1. Concrete Masonry Unit Test: For each type of unit required, according to ASTM C140/C140M for compressive strength.

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2. Mortar Test (Property Specification): For each mix required, according to ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.
3. Grout Test (Compressive Strength): For each mix required, according to ASTM C1019.

1.6 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all relevant installers.

1.7 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.
- C. Shop Drawings: For the following:
 1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
 2. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement." Show elevations of reinforced walls.
- D. Qualification Data: For testing agency.
- E. Material Certificates: For each type and size of the following:
 1. Masonry units.
 - a. Include material test reports substantiating compliance with requirements.
 - b. For masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.
 2. Cementitious materials. Include brand, type, and name of manufacturer.
 3. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
 4. Grout mixes. Include description of type and proportions of ingredients.
 5. Reinforcing bars.
 6. Joint reinforcement.
 7. Anchors, ties, and metal accessories.
- F. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.
 1. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of

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masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to Tables 1 and 2 in TMS602.

2. Certify that water repellent admixture manufacturer has certified masonry unit manufacturer as an approved user of water repellent admixture in the manufacture of concrete block.
- G. Test Reports: Concrete masonry manufacturer's test reports for units with integral water repellent admixture.
- H. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.
 2. Include test reports, according to ASTM C1019, for grout mixes required to comply with compressive strength requirement.
- I. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.8 QUALITY ASSURANCE

- A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.
- B. Testing Agency Qualifications: Qualified according to ASTM C1093 for testing indicated.
- C. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with minimum ten years of experience.
- D. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of experience.
- E. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.
- F. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

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- B. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- D. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- E. Deliver preblended, dry mortar mix in moisture-resistant containers designed for use with dispensing silos. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in covered weatherproof dispensing silos.
- F. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

PART 2 PRODUCTS

2.1 MASONRY UNITS, GENERAL

- A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects will be exposed in the completed Work.

2.2 CONCRETE MASONRY UNITS

- A. Concrete Block: Comply with referenced standards and as follows:
 - 1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depths as indicated on drawings for specific locations.
 - 2. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
 - a. Provide special shapes for corners, jambs, sashes, movement joints, bonding, and other special conditions.
 - b. Provide square-edge units for outside corners unless otherwise indicated.
 - 3. Load-Bearing Units: ASTM C90, medium weight, unless noted otherwise.
 - a. Unit Compressive Strength: Provide units with minimum average net-area compressive strength as indicated on drawings.
 - b. Both hollow and solid block, as indicated.
 - c. Exposed Faces: Provide color and texture matching the range represented by Architect's sample.

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4. Units with Integral Water Repellent: Concrete block units as specified in this section with polymeric liquid admixture added to concrete masonry units at the time of manufacture.
 - a. Performance of Units with Integral Water Repellent:
 - 1) Water Permeance: When tested per ASTM E514/E514M and for a minimum of 72 hours.
 - (a) No water visible on back of wall above grade at the end of 24 hours.
 - (b) No more than 25 percent of wall area above grade visibly damp at end of test.
 - 2) Flexural Bond Strength: ASTM C1072; minimum 10 percent increase.
 - 3) Compressive Strength: ASTM C1314; maximum 5 percent decrease.
 - 4) Drying Shrinkage: ASTM C1148; maximum 5 percent increase in shrinkage.
 - b. Use only in combination with mortar that also has integral water repellent admixture.
 - c. Use water repellent admixtures for masonry units and mortar by a single manufacturer.

2.3 MORTAR AND GROUT MATERIALS

- A. Masonry Cement: ASTM C91/C91M, Type S.
- B. Portland Cement: ASTM C150/C150M, Type I or II; color as required to produce approved color sample.
- C. Hydrated Lime: ASTM C207, Type S.
- D. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- E. Mortar Aggregate: ASTM C144.
 1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
 2. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
- F. Grout Aggregate: ASTM C404.
- G. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979/C979M.
 1. Color(s): As selected by Architect from manufacturer's full range.
 2. Use only pigments with a record of satisfactory performance in masonry mortar.
- H. Water: Clean and potable.

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- I. Accelerating Admixture: Nonchloride, noncorrosive type, for use in cold weather, complying with ASTM C494/C494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
- J. Integral Water Repellent Admixture for Mortar: Polymeric liquid admixture added to mortar at the time of manufacture.
 - 1. Use only in combination with masonry units manufactured with integral water repellent admixture.
 - 2. Use only water repellent admixture for mortar from the same manufacturer as water repellent admixture in masonry units.
 - 3. Meet or exceed performance specified for water repellent admixture used in masonry units.
- K. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
 - 1. Type: Type S.
 - 2. Color: Standard gray.
 - 3. Water-repellent mortar for use with water repellent masonry units.

2.4 REINFORCEMENT AND ANCHORAGE

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi), deformed bars; uncoated.
- B. Single Wythe Joint Reinforcement: ASTM A951/A951M.
 - 1. Type: Ladder.
 - 2. Material: ASTM A1064/A1064M steel wire, hot dip galvanized after fabrication to ASTM A153/A153M, Class B.
 - 3. Size: 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.
 - a. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
 - b. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.
- C. Anchor Bolts: Headed steel bolts complying with ASTM A307, Grade A; with ASTM A563 hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A153/A153M, Class C; of dimensions indicated.
- D. Headed Anchor Shear Stud Connectors: Made from ASTM A108 Grade 1015 bars, headed-stud type, cold-finished carbon steel; AWS D1.1/D1.1M, Type B.
- E. Post-Installed Anchors: As indicated on drawings.
- F. Dowels for Precast Concrete at concrete caps. See Section 03 4500.

2.5 ACCESSORIES

- A. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D2000, Designation M2AA-805 or PVC, complying with ASTM D2287, Type PVC-65406, and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
- B. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.
- C. Cavity Mortar Control: Semi-rigid polyethylene or polyester mesh panels, sized to thickness of wall cavity, and designed to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.
 - 1. Mortar Diverter: Semi-rigid mesh designed for installation at flashing locations.
- D. Building Paper: ASTM D226/D226M, Type I ("No.15") asphalt felt, for use as bond-breaker strips.
- E. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and hold reinforcing bars in center of cells. Units are formed from 0.1483 inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.
- F. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

2.6 MORTAR AND GROUT MIXING

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
 - 1. Do not use calcium chloride in mortar or grout.
- B. Mortar for Unit Masonry: ASTM C270, using the Property Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.
 - 1. Use Type S mortar unless otherwise indicated.
 - 2. Include integral water-repellent admixture.
- C. Pigmented Mortar: Proportion selected pigments and other ingredients to match Architect's sample, without exceeding manufacturer's recommended pigment-to-cement ratio.
 - 1. Application: Use pigmented mortar for exposed mortar joints with the following units:
 - a. Decorative CMUs.
- D. Grout for Unit Masonry: Comply with ASTM C476.

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1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 7 in TMS 602 for dimensions of grout spaces and pour height.
 2. Proportion grout in accordance with ASTM C476, Table 1 or paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi.
 3. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C143/C143M.
- E. Admixtures: Add to mixture at manufacturer's recommended rate and in accordance with manufacturer's instructions; mix uniformly.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
1. Verify that field conditions are acceptable and are ready to receive masonry.
 2. Verify that related items provided under other sections are properly sized and located.
 3. Verify that foundations are within tolerances specified.
 4. Verify that reinforcing dowels are properly placed.
 5. Verify that built-in items and piping systems are in proper location, and ready for roughing into masonry work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Direct and coordinate placement of metal anchors supplied for installation under other sections.
- B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.3 COLD AND HOT WEATHER REQUIREMENTS

- A. Cold-Weather Requirements: Comply with cold-weather construction requirements contained in TMS 402/602 or applicable building code, whichever is more stringent.
1. Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions.

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2. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 degrees F and higher and will remain so until masonry has dried, but not less than 7 days after completing work.
- B. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 402/602 or applicable building code, whichever is more stringent.

3.4 INSTALLATION, GENERAL

- A. Build chases and recesses to accommodate items specified in this and other Sections.
- B. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.
- C. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

3.5 TOLERANCES

- A. Dimensions and Locations of Elements:
1. For dimensions in cross section or elevation do not vary by more than plus 1/2-inch or minus 1/4-inch.
 2. For location of elements in plan do not vary from that indicated by more than plus or minus 1/2-inch.
 3. For location of elements in elevation do not vary from that indicated by more than plus or minus 1/4-inch in a story height or 1/2-inch total.
- B. Lines and Levels:
1. For bed joints and top surfaces of bearing walls do not vary from level by more than 1/4-inch in 10 feet, or 1/2-inch maximum.
 2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8-inch in 10 feet, 1/4-inch in 20 feet, or 1/2-inch maximum.
 3. For vertical lines and surfaces do not vary from plumb by more than 1/4-inch in 10 feet, 3/8-inch in 20 feet, or 1/2-inch maximum.
 4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8-inch in 10 feet, 1/4-inch in 20 feet, or 1/2-inch maximum.
 5. For lines and surfaces do not vary from straight by more than 1/4-inch in 10 feet, 3/8-inch in 20 feet, or 1/2-inch maximum.
 6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4-inch in 10 feet, or 1/2-inch maximum.

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C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8-inch, with a maximum thickness limited to 1/2-inch.
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8-inch.
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8-inch or minus 1/4-inch.
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8-inch.

3.6 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Concrete Masonry Units:
 1. Bond Pattern: Running.
 2. Coursing: One unit and one mortar joint to equal 8 inches. Do not use units with less than nominal 4 inches horizontal face dimensions at corners or jambs.
- C. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar before laying fresh masonry.
- D. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- E. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.
- F. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

3.7 PLACING AND BONDING

- A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- B. Lay hollow masonry units as follows:
 1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
 2. With webs fully bedded in mortar in all courses of pilasters.

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3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
 4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.
- C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
 - D. Remove excess mortar and mortar smears as work progresses.
 - E. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting or high pressure cleaning methods.
 - F. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.
 - G. Interlock intersections and external corners.
 - H. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
 - I. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
 - J. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

3.8 REINFORCEMENT AND ANCHORAGE - GENERAL

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8-inch on exterior side of walls, 1/2-inch elsewhere.
- B. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.
- C. Place joint reinforcement in first horizontal joints above and below openings. Extend minimum 16 inches beyond each side of opening.
- D. Place continuous joint reinforcement in first and second joint below top of walls.
- E. Lap joint reinforcement ends minimum 6 inches.
- F. Interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.
- G. Provide continuity at wall intersections and corners by using prefabricated T-shaped and L-shaped units.
- H. Cut and bend reinforcing units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

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- I. Provide reinforcement bar positioners for vertical reinforcing as required to maintain proper location and alignment.

3.9 CONTROL AND EXPANSION JOINTS

- A. General: Install control and expansion joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
 - 1. Do not continue horizontal joint reinforcement through control or expansion joints.
 - 2. Lap bond beam reinforcing at control joints as shown on Drawings.
- B. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.
- C. Size control joints as indicated on drawings; if not shown, 3/8 to 1/2 inch wide and deep.

3.10 REINFORCED UNIT MASONRY INSTALLATION

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
 - 1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
 - 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
 - 1. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
 - 2. Limit height of vertical grout pours to not more than 48 inches.

3.11 FIELD QUALITY CONTROL

- A. Testing and Inspecting: An independent testing and special inspection agency will perform field quality control tests and inspections, as specified in Section 01 4000 - Quality Requirements. Retesting or re-inspection of materials that fail to meet specified requirements shall be done at Contractor's expense.

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- B. Inspections: Level 1 special inspections according to the "International Building Code."
 - 1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
 - 2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
 - 3. Place grout only after inspectors have verified proportions of site-prepared grout.
- C. Testing Prior to Construction: One set of tests.
- D. Testing Frequency: One set of tests for each 1000 square feet of wall area or portion thereof.
- E. Concrete Masonry Unit Tests: Test each variety of concrete unit masonry in accordance with ASTM C140/C140M for compliance with requirements of this specification.
- F. Mortar Tests: Test each type of mortar in accordance with ASTM C780, testing with same frequency as masonry samples. Test mortar for mortar air content and compressive strength.
- G. Grout Test: Test each mix provided for compressive strength, according to ASTM C1019.

3.12 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. Remove excess mortar and mortar droppings.
- D. Replace defective mortar. Match adjacent work.
- E. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- F. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 - 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 - 3. Clean soiled surfaces with cleaning solution.

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4. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
5. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
6. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.

3.13 PROTECTION

- A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

3.14 MASONRY WASTE DISPOSAL

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
- B. Excess Masonry Waste: Remove excess clean masonry waste and legally dispose of off Owner's property.

END OF SECTION

SECTION 05 1200 - STRUCTURAL STEEL FRAMING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Structural steel framing members.
- B. Base plates.
- C. Architecturally Exposed Structural Steel (AESS).
- D. Grouting under base plates.

1.2 RELATED REQUIREMENTS

- A. Section 01 4000 - Quality Requirements: For independent testing agency procedures and administrative requirements.
- B. Section 05 2100 - Steel Joist Framing.
- C. Section 05 3100 - Steel Decking: Support framing for small openings in deck.
- D. Section 05 5000 - Metal Fabrications: Steel fabrications affecting structural steel work.
- E. Section 09 9113 - Exterior Painting: for surface preparation and priming requirements.
- F. Section 09 9123 - Interior Painting: for surface preparation and priming requirements.
- G. Section 09 9600 - High-Performance Coatings: for surface preparation and priming requirements.

1.3 REFERENCE STANDARDS

- A. AISC (MAN) - Steel Construction Manual; 2011.
- B. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges; 2016.
- C. AISC 360 - Specification for Structural Steel Buildings; 2016 (Revised 2021).
- D. AISC S303 - Code of Standard Practice for Steel Buildings and Bridges; 2010.
- E. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- F. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.

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- G. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold Finished; 2013.
- H. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- I. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- J. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2014.
- K. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
- L. ASTM A563/A563M - Standard Specification for Carbon and Alloy Steel Nuts (Inch and Metric); 2021a.
- M. ASTM A572/A572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel; 2015.
- N. ASTM A6/A6M - Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling; 2016.
- O. ASTM A780/A780M - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings; 2009 (Reapproved 2015).
- P. ASTM A992/A992M - Standard Specification for Structural Steel Shapes; 2011 (Reapproved 2015).
- Q. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2014a.
- R. ASTM E94/E94M - Standard Guide for Radiographic Examination Using Industrial Radiographic Film; 2017.
- S. ASTM E164 - Standard Practice for Contact Ultrasonic Testing of Weldments; 2013.
- T. ASTM E165/E165M - Standard Test Method for Liquid Penetrant Examination for General Industry; 2012.
- U. ASTM E709 - Standard Guide for Magnetic Particle Testing; 2014.
- V. ASTM F436/F436M - Standard Specification for Hardened Steel Washers Inch and Metric Dimensions; 2016.
- W. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength; 2007a.

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- X. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions; 2015a.
- Y. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2012.
- Z. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2014 (Amended 2015).
- AA. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2021).
- AB. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel; International Accreditation Service, Inc; 2011.
- AC. RCSC (HSBOLT) - Specification for Structural Joints Using High-Strength Bolts; Research Council on Structural Connections; 2009.
- AD. SSPC-PA 1 - Shop, Field, and Maintenance Painting of Steel; 2004.
- AE. SSPC-SP 2 - Hand Tool Cleaning; 2018.
- AF. SSPC-SP 3 - Power Tool Cleaning; 2018.

1.4 DEFINITIONS

- A. Structural Steel: Elements of structural-steel frame, as classified by AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."
- B. Seismic-Force-Resisting System (SFRS): The portion of the structural steel frame that has been considered in the design to provide required resistance to the prescribed seismic forces.
 - 1. See the drawings for members indicated as part of the SFRS.
- C. Architecturally Exposed Structural Steel (AESS): Members or connections which require a higher level of fabrication and installation care to clean up welds, holes, bolts, etc. as shown in the additional requirements for AESS listed herein.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: For each type of product indicated.
- C. Shop Drawings:
 - 1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, fasteners, and other pertinent data

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2. Indicate member shapes by AISC designation in addition to piece-marks on erection drawings.
 3. Connections. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical high-strength bolted connections.
 4. Include embedment drawings.
 5. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
- D. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide according to AWS D1.1/D1.1M, "Structural Welding Code - Steel," for each welded joint whether prequalified or qualified by testing, including the following:
1. Power source (constant current or constant voltage).
 2. Electrode manufacturer and trade name, for demand critical welds.
- E. Manufacturer's Mill Certificate: Certify that products meet or exceed specified requirements.
- F. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within the previous 12 months.
- G. Fabricator's Qualification Statement: Provide documentation showing steel fabricator and installer is qualified as required.
- H. Product Test Reports:
1. Shop Primers (Including VOC/Sustainability).
 2. Non-shrink grout.

1.6 QUALITY ASSURANCE

- A. Comply with applicable provisions of the following specifications and documents:
1. AISC 360: Fabricate structural steel members in accordance with the "Specification for Structural Steel Buildings", and AISC (MAN) "Steel Construction Manual."
 2. AISC S303: "Code of Standard Practice for Steel Buildings and Bridges".
 3. RCSC (HSBOLT): "Specification for Structural Joints Using High-Strength Bolts."
 4. Maintain one copy of each document on site.
- B. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and no more than 12 months before start of scheduled welding work.
- C. Fabricator Qualifications: A qualified steel fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category "BU" (previously noted as "STD"). Submit documentation of AISC Certification at time of Bid.

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- D. Erector: Company specializing in performing the work of this section with minimum 10 years of documented experience.
- E. Preinstallation Conference: Conduct conference at Project site.

1.7 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Steel Angles, Plates, Channels, and Bars: ASTM A36/A36M.
- B. Steel W Shapes and Tees: ASTM A992/A992M.
- C. Cold-Formed Structural Tubing: ASTM A500/A500M, Grade B.
- D. Pipe: ASTM A53/A53M, Grade B, Type E or S, Finish black.
- E. Shear Stud Connectors: Made from ASTM A108 Grade 1015 bars, headed-stud type, cold-finished carbon steel; AWS D1.1/D1.1M, Type B.
- F. Structural Bolts and Nuts: Carbon steel, ASTM A307, Grade A.
- G. High-Strength Structural Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, with matching compatible ASTM A563/A563M nuts and ASTM F436/F436M washers.
 - 1. Grades: A325 and F1852, where indicated on drawings.
- H. Tension-Control High-Strength Bolt-Nut-Washer Assemblies: Twist-off type; ASTM F1852, Type 1, round head assemblies consisting of steel structural bolts with splined ends, heavy-hex carbon-steel nuts, and hardened carbon-steel washers, plain finish.
- I. Unheaded Anchor Rods: ASTM F1554, Grade as indicated on plans, plain and weldable, straight or hooked as indicated, with matching ASTM A563 or ASTM A563M, heavy-hex carbon-steel nuts, and ASTM F436, Type 1, hardened carbon-steel washers; all with plain finish.
 - 1. Plate Washers: ASTM A36/A36M, carbon-steel; to be provided where indicated on plans.

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- J. Threaded Rods: ASTM A36/A36M, with matching ASTM A563 or ASTM A563M, heavy-hex carbon-steel nuts, and ASTM F436, Type 1, hardened carbon-steel washers.
 - 1. Finish: Plain.
- K. Eye Bolts and Nuts: Made from cold-finished carbon steel bars, ASTM A108, Grade 1030.
- L. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- M. Grout: ASTM C1107/C1107M; Non-shrink; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
 - 1. Minimum Compressive Strength at 48 Hours: 2,000 pounds per square inch.
 - 2. Minimum Compressive Strength at 28 Days: 6,000 pounds per square inch.
- N. Shop and Touch-Up Primer: Fabricator's standard, complying with VOC limitations of authorities having jurisdiction and as indicated.
 - 1. Low-Emitting Materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 FABRICATION

- A. Shop fabricate to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360.
 - 1. Identify high-strength structural steel according to ASTM A6/A6M and maintain markings until structural steel has been erected.
 - 2. Mark and match-mark materials for field assembly.
 - 3. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.
- B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
 - 1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.
- C. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel framing members.
 - 1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
 - 2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
 - 3. Weld threaded nuts to framing and other specialty items indicated to receive other work.
- D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.

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- E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP 2, "Hand Tool Cleaning."
- F. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1MA and manufacturer's written instructions.
- G. Fabricate connections for bolt, nut, and washer connectors.
- H. Fabricate beams with rolling camber up.
- I. Additional Fabrication Requirements for AESS at Shade Trellis Structures:
 - 1. Grind sheared, punched and flame-cut edges to remove burrs and provide smooth surfaces and edges.
 - 2. Fabricate with piece marks fully hidden in the completed structure or made with media that permits full removal after erection.
 - 3. Seal-weld open ends of hollow structural sections with 1/4 inch minimum closure plates.
 - 4. Cut, drill or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
 - 5. Locate erection aides in unexposed locations or completely remove, fill and grind smooth after erection has been completed.
 - 6. Remove mill marks.
 - 7. Provide half tolerances for connections at copes, radiused edges and mitered corners.

2.3 SHOP CONNECTIONS

- A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using High-Strength Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Pre-tensioned or Slip Critical, as indicated on drawings.
- B. Weld Connections: Comply with AWS D1.1 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
 - 1. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC 303 for mill material.
- C. Additional Shop Connection Requirements for AESS at Shade Trellis Structures:
 - 1. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality and methods used in correcting welding work and comply with the following:
 - a. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC 303 for mill material.

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- b. Use weld sizes, fabrication sequence and equipment for AESS that limit distortions to allowable tolerances.
2. Provide continuous, sealed welds at connections where AESS is exposed to weather.
3. Provide continuous welds of uniform size and profile.
4. Make butt and groove welds flush to adjacent surfaces.
5. Remove backing bars and/or runoff tabs; back-gouge and grind steel smooth.
6. Make fillet welds to uniform profile with smooth transition.

2.4 FINISH AND SHOP PRIMING

- A. Prepare structural component surfaces in accordance with SSPC-SP 2. Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits.
- B. Shop prime structural steel members. Do not prime surfaces that will be field welded, in contact with concrete, high strength bolted, or slip-critical connections.
- C. Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
- D. Painting: Prepare steel and apply a one-coat, nonasphaltic primer complying with MPI #79.

PART 3 EXECUTION

3.1 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.
 1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.
- B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.
 1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
 2. Clean and relubricate bolts and nuts that become dry or rusty before use.
 3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F3125/F3125M, grade F1852 fasteners, and for retesting fasteners after lubrication.

3.2 EXAMINATION

- A. Verify that conditions are appropriate for erection of structural steel and that the work may properly proceed.
- B. Verify, with steel Erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.
- C. Examine AESS for twists, kinks, warping, gouges, and other imperfections before erecting.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 ERECTION

- A. Erect structural steel in compliance with AISC S303 "Code of Standard Practice for Steel Buildings and Bridges," and AISC 360 "Specification for Structural Steel Buildings."
- B. Allow for erection loads and provide sufficient temporary bracing to maintain structure in safe condition, plumb, and in true alignment until completion of erection and installation of permanent bracing.
 - 1. Additional requirements for AESS at Shade Trellis Structures: Locate welded tabs for attaching temporary bracing and safety cabling where they will be concealed from view in the completed Work of AESS.
- C. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
 - 1. Level and plumb individual members of structure.
 - 2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.
- D. Base Bearing and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
 - 1. Set plates for structural members on wedges, shims, or setting nuts as required.
 - 2. Weld plate washers to top of baseplate as indicated.
 - 3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
 - 4. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.

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- E. Field weld components indicated on drawings.
- F. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M and manufacturer's written instructions.
- G. Use carbon steel bolts only for temporary bracing during construction, unless otherwise specifically permitted on drawings. Install high-strength bolts in accordance with RCSC (HSBOLT) "Specification for Structural Joints Using High-Strength Bolts".
- H. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.
- I. Do not field cut or alter structural members without approval of Architect.
- J. Do not use thermal cutting during erection.
- K. Splice members only where indicated.
- L. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.
- M. Grout solidly between column plates and bearing surfaces, complying with manufacturer's instructions for nonshrink grout. Trowel grouted surfaces smooth, splaying neatly to 45 degrees.

3.4 FIELD CONNECTIONS

- A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using High-Strength Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Pre-tensioned or Slip Critical, as indicated on drawings.
 - 2. Exposed steel connections shall orient bolt heads in same direction for each connection, and to maximum extent possible, orient bolt heads in the same direction for all similar connections in any given area of work. The bolt head shall be on the exposed side unless noted otherwise.
- B. Weld Connections: Comply with AWS D1.1 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
 - 1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
 - 2. Remove backing bars or runoff tabs where indicated, back gouge, and grind steel smooth.
 - 3. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.
 - 4. Additional field welding requirements for AESS at Shade Trellis Structures:

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- a. Provide continuous, sealed welds at all connections where AESS is exposed to weather.
- b. Provide continuous welds of uniform size and profile.
- c. Make butt and groove field welds flush to adjacent surfaces.
- d. Make fillet welds to uniform size and profile with smooth transition. Grind smooth to create even transition where welds are exposed.
- e. Remove backing bars and/or runoff tabs; back-gouge and grind steel smooth at AESS.
- f. Remove erection bolts, fill holes, and grind smooth. Remove erection tabs and grind smooth.
- g. Fill weld access holes in AESS and grind smooth.

3.5 FIELD QUALITY CONTROL

- A. Testing and Inspection Agency: Owner will engage a qualified independent testing and inspection agency to inspect field welds and high-strength bolted connections, as specified in Section 01 4000 - Quality Requirements.
- B. High-Strength Bolts: Provide testing and verification of shop and field-bolted connections in accordance with RCSC "Specification for Structural Joints Using High-Strength Bolts", testing at least 10 percent of bolts at each connection.
- C. Welded Connections: Visually inspect all field-welded connections and test at least 10 percent of welds using one of the following:
 1. Radiographic testing performed in accordance with ASTM E94/E94M.
 2. Ultrasonic testing performed in accordance with ASTM E164.
 3. Liquid penetrant inspection performed in accordance with ASTM E165/E165M.
 4. Magnetic particle inspection performed in accordance with ASTM E709.
- D. Welded Shear Connectors: In addition to visual inspection, test and inspect field-welded shear connectors according to requirements in AWS D1.1/D1.1M for stud welding and as follows:
 1. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
 2. Conduct tests on additional shear connectors if weld fracture occurs on shear connectors already tested, according to requirements in AWS D1.1/D1.1M.
- E. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

3.6 REPAIRS AND PROTECTION

- A. Touchup Painting: Immediately after erection, clean exposed areas where primer is damaged or missing and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
 - 1. Clean and prepare surfaces by SSPC-SP 2 hand tool cleaning or SSPC-SP 3 power-tool cleaning.
- B. Touchup Painting: Cleaning and touchup painting are specified in Section 09 9113 - Exterior Painting, and Section 09 9123 - Interior Painting.
- C. Additional Requirements for AESS at Shade Trellis Structures:
 - 1. Remove welded tabs that were used for attaching temporary bracing and safety cabling and that are exposed to view in the completed work. Grind steel smooth.
 - 2. Cleaning and touch-up painting shall be adhered to as specified in Section 09 9113 - Exterior Painting, and Section 09 9123 - Interior Painting.

END OF SECTION

SECTION 05 2100 - STEEL JOIST FRAMING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Open web steel joists, with bridging, attached seats and anchors.
- B. Loose bearing members, such as plates or angles, and anchor bolts for site placement.
- C. Supplementary framing for floor and roof openings greater than 12 inches.

1.2 RELATED REQUIREMENTS

- A. Section 05 1200 - Structural Steel Framing: Superstructure framing, and support framing for openings greater than 12 inches in decking.
- B. Section 05 3100 - Steel Decking: Support framing for openings less than 12 inches in decking.
- C. Section 05 5000 - Metal Fabrications: Non-framing steel fabrications attached to joists.

1.3 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- B. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold Finished; 2013.
- C. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2014.
- D. ASTM A563/A563M - Standard Specification for Carbon and Alloy Steel Nuts (Inch and Metric); 2021a.
- E. ASTM E94/E94M - Standard Guide for Radiographic Examination Using Industrial Radiographic Film; 2017.
- F. ASTM E164 - Standard Practice for Contact Ultrasonic Testing of Weldments; 2013.
- G. ASTM E165/E165M - Standard Test Method for Liquid Penetrant Examination for General Industry; 2012.
- H. ASTM E709 - Standard Guide for Magnetic Particle Testing; 2014.
- I. ASTM F436/F436M - Standard Specification for Hardened Steel Washers Inch and Metric Dimensions; 2016.

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- J. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions; 2015a.
- K. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2014 (Amended 2015).
- L. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2021).
- M. RCSC (HSBOLT) - Specification for Structural Joints Using High-Strength Bolts; Research Council on Structural Connections; 2009.
- N. SJI 100 - Standard Specifications for K-Series, LH-Series, and DLH-Series Open Web Steel Joists, and for Joist Girders; 2020.
- O. SJI Technical Digest No. 9 - Handling and Erection of Steel Joists and Joist Girders; 2008.
- P. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).
- Q. SSPC-SP 2 - Hand Tool Cleaning; 2018.
- R. SSPC-SP 3 - Power Tool Cleaning; 2018.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate standard designations, joist coding, configurations, sizes, spacings, cambers, locations of joists, joist leg extensions, bridging, connections, attachments, and all special loading as indicated on the Contract Documents.
- C. Letter of conformance indicating that all joists have been designed for all special loading as indicated on the Contract Documents, stamped and sealed by the design engineer.
- D. Welders' Certificates: Submit manufacturer's certificates, certifying welders employed on the Work, verifying AWS qualification within the previous 12 months.
- E. Designer's Qualification Statement.
- F. Manufacturer Certificates: Signed by manufacturers certifying that joists comply with requirements.
- G. Comprehensive engineering analysis of special joists signed and sealed by the qualified professional engineer responsible for its preparation.

1.5 QUALITY ASSURANCE

- A. Designer Qualifications: Perform design by or under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State in which the Project is located.
 - 1. Design connections not detailed on drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located.
- B. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and dated no more than 12 months before start of scheduled welding work.
- C. Manufacturer Qualifications: A manufacturer certified by SJI to manufacture joists complying with applicable standard specifications and load tables in SJI's "Specifications."
 - 1. Manufacturer's responsibilities include providing professional engineering services for designing special joists to comply with performance requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Transport, handle, store, and protect products to SJI requirements.
- B. Protect joists from corrosion, deformation, and other damage during delivery, storage, and handling.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Open Web Joists: SJI Type K Joists and KCS Joists:
 - 1. Manufacture steel joists of type indicated according to "Standard Specifications for Open Web Steel Joists, K-Series" in SJI's "Specifications," with steel-angle top- and bottom-chord members, underslung ends, and parallel top chord.
 - 2. Steel Joist Substitutes: Manufacture according to "Standard Specifications for Open Web Steel Joists, K-Series" in SJI's "Specifications," with steel-angle or -channel members.
 - 3. Camber joists according to SJI's "Specifications."
 - 4. Provide top chord extensions as indicated.
 - a. Top-Chord Extensions: Extend top chords of joists with SJI's Type S top-chord extensions where indicated, complying with SJI's "Specifications."
 - b. Extended Ends: Extend bearing ends of joists with SJI's Type R extended ends where indicated, complying with SJI's "Specifications."

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5. Provide holes in chord members where indicated for connecting and securing other construction to joists.
 6. Equip bearing ends of joists with manufacturer's standard beveled ends or sloped shoes if joist slope exceeds 1/4 inch per 12 inches.
 7. Minimum End Bearing on Steel Supports: Comply with referenced SJI standard and as indicated.
 8. Finish: Shop primed.
- B. Anchor Bolts, Nuts and Washers: ASTM A307, plain.
- C. High-Strength Structural Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, with matching compatible ASTM A563/A563M nuts and ASTM F436/F436M washers.
1. Finish: Plain.
- D. Structural Steel For Supplementary Framing and Joist Leg Extensions: ASTM A36/A36M.
- E. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded. Comply with AWS requirements and procedures for shop welding, appearance, quality of welds, and methods used in correcting welding work.
- F. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- G. Joist Accessories:
1. Bridging: Schematically indicated. Detail and fabricate according to SJI's "Specifications." Furnish additional erection bridging if required for stability.
 2. Steel bearing plates with integral anchorages are specified in Section 05 1200 - Structural Steel Framing.
 3. Furnish miscellaneous accessories including splice plates and bolts required by joist manufacturer to complete joist assembly.

2.2 FINISH

- A. Shop prime joists as specified.
1. Do not prime surfaces that will be field welded.
 2. Apply one coat of shop primer to joists and joist accessories to be primed to provide a continuous, dry paint film not less than 1 mil thick.
- B. Prepare surfaces to be finished in accordance with SSPC-SP 2.
1. Clean and remove loose scale, heavy rust, and other foreign materials from fabricated joists and accessories.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine supporting substrates, embedded bearing plates, and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ERECTION

- A. Before installation, splice joists delivered to Project site in more than one piece.
- B. Erect joists with correct bearing on supports.
- C. Space, adjust, and align joists accurately in location before permanently fastening.
- D. Allow for erection loads. Provide sufficient temporary bracing to maintain framing safe, plumb, and in true alignment.
- E. Coordinate the placement of anchors for securing loose bearing members furnished as part of the work of this section.
- F. After joist alignment and installation of framing, field weld joist seats to steel bearing surfaces. Coordinate welding sequence and procedure with placement of joists. Comply with AWS requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
- G. Bolt joists to supporting steel framework using high-strength structural bolts. Comply with RCSC's "Specification for Structural Joints High-Strength Bolts" for high-strength structural bolt installation and tightening requirements.
- H. Install supplementary framing for roof openings greater than 12 inches.
- I. Install and connect bridging concurrently with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords if terminating at walls or beams.
 - 1. Do not permit erection of decking until joists are braced, bridged, and secured or until completion of erection and installation of permanent bridging and bracing.
- J. Do not field cut or alter structural members without approval of joist manufacturer.
- K. After erection, prime welds, damaged shop primer, and surfaces not shop primed.

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1. Clean and prepare surfaces by hand-tool cleaning according to SSPC-SP 2 or power-tool cleaning according to SSPC-SP 3.
2. Apply a compatible primer of same type as primer used on adjacent surfaces.

3.3 PROTECTION

- A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that joists and accessories are without damage or deterioration at time of Substantial Completion.

3.4 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.
- B. Welded Connections: Visually inspect all field-welded connections and test at least 5 percent of welds using one of the following:
 1. Radiographic testing performed in accordance with ASTM E94/E94M.
 2. Ultrasonic testing performed in accordance with ASTM E164.
 3. Liquid penetrant inspection performed in accordance with ASTM E165/E165M.
 4. Magnetic particle inspection performed in accordance with ASTM E709.

END OF SECTION

SECTION 05 3100 - STEEL DECKING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Roof deck.
- B. Supplementary framing for openings up to and including 12 inches.

1.2 RELATED REQUIREMENTS

- A. Section 05 1200 - Structural Steel Framing: Support framing for openings larger than 12 inches and steel angle deck edges.

1.3 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- B. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold Finished; 2013.
- C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2017.
- E. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2018.
- F. ASTM A780/A780M - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings; 2009 (Reapproved 2015).
- G. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2018.
- H. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2014 (Amended 2015).
- I. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2021).
- J. AWS D1.3/D1.3M - Structural Welding Code - Sheet Steel; 2018.
- K. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel; International Accreditation Service, Inc; 2011.

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- L. ICC-ES AC43 - Acceptance Criteria for Steel Deck Roof and Floor Systems; ICC Evaluation Service, Inc; 2010 (R2013).
- M. SDI (DM) - Publication No.30, Design Manual for Composite Decks, Form Decks, and Roof Decks; 2007.
- N. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).
- O. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittals procedures.
- B. Product Data: Provide deck profile characteristics, dimensions, structural properties, and finishes.
- C. Shop Drawings: Indicate deck plan, support locations, projections, openings, pertinent details, and accessories.
- D. Certificates: Certify that products furnished meet or exceed specified requirements.
- E. Submit manufacturer's installation instructions.
- F. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before start of scheduled welding work.

1.5 QUALITY ASSURANCE

- A. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.3/D1.3M and dated no more than 12 months before start of scheduled welding work.
- B. Fabricator Qualifications: A qualified steel fabricator that is accredited by the International Accreditation Service (IAS) Fabricator Inspection Program for Structural Steel in accordance with IAS AC172.
- C. Testing Agency Qualifications: Qualified according to ASTM E329 for testing indicated.
- D. Installer Qualifications: Company specializing in performing the work of this Section with minimum five years of experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Cut plastic wrap to encourage ventilation.
- C. Separate sheets and store deck on dry wood sleepers; slope for positive drainage. Protect with a waterproof covering and ventilate to avoid condensation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Steel Deck:
 - 1. Canam Steel Corporation: www.canam-steeljoists.ws.
 - 2. CMC Joist & Deck: www.cmc.com.
 - 3. Cordeck, Inc.: www.cordeck.com.
 - 4. CSi Metal Dek Group: www.metaldek.com.
 - 5. Epic Metals Corporation: www.epicmetals.com.
 - 6. New Millennium Building Systems, LLC: www.newmill.com.
 - 7. Nucor-Vulcraft Group: www.vulcraft.com.
 - 8. Verco Manufacturing Co.: www.vercodeck.com.
 - 9. Substitutions: See Section 01 6000 - Product Requirements.

2.2 PERFORMANCE REQUIREMENTS

- A. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."

2.3 STEEL DECK

- A. Roof Deck: Non-composite type, fluted steel sheet, without top-flange stiffening grooves:
 - 1. Ungalvanized Steel Sheet: ASTM A1008/A1008M, Designation SS, Grade 50, Type 1.
 - 2. Primer: Shop coat of manufacturer's standard primer paint over cleaned and phosphatized substrate.
 - a. Color: Manufacturer's Standard.

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3. Span Condition: Triple spans minimum, everywhere framing allows.
4. Minimum Base Metal Thickness: As Indicated.
5. Nominal Depth: As Indicated.
6. Profile: Fluted; SDI WR, or as indicated.
7. Side Laps: As Indicated.
8. End Joints: Lapped, welded as indicated.

2.4 ACCESSORY MATERIALS

- A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.
- B. Bearing Plates and Angles: ASTM A36/A36M steel.
- C. Welding Materials: AWS D1.1/D1.1M.
- D. Sidelap Fasteners: Steel; corrosion-resistant, hexagonal washer head, self-drilling, self-tapping screws, minimum diameter as indicated.
- E. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- F. Flexible Flute Closures: Closed cell foam rubber, 1 inch thick; profiled to fit tight to the deck.

2.5 FABRICATED DECK ACCESSORIES

- A. Sheet Metal Deck Accessories: Metal closure strips, cover plates, and girder fillers, 20 gage, 0.0359 inch thick minimum sheet steel with minimum yield strength of 33,000 psi; of profile and size as indicated; finished same as deck.
- B. Roof Sump Pans: Formed sheet steel, 14 gauge, 0.0747 inch minimum thickness, flat bottom, sloped sides, recessed 1-1/2 inches below roof deck surface, bearing flange 3 inches wide, sealed watertight.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions prior to beginning work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Erect metal deck in accordance with SDI Design Manual and manufacturer's instructions.
- B. Locate deck bundles to prevent overloading of supporting members.
- C. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened.
 - 1. Place deck panels flat and square and fasten to supporting frame without warp or deflection. Do not stretch or contract side-lap interlocks.
 - 2. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.
 - 3. On steel supports provide minimum 2 inch bearing.
 - 4. Roof Deck End Joints: Lapped.
- D. Drive mechanical sidelap connectors completely through adjacent lapped sheets; positively engage adjacent sheets with minimum three-thread penetration.
 - 1. Sidelap Spacing: As indicated.
- E. Weld deck in accordance with AWS D1.3/D1.3M. Fasten deck panels to steel supporting members by arc spot (puddle) welds as follows:
 - 1. Weld Diameter: As indicated.
 - 2. Weld Spacing: Space and locate welds as indicated.
- F. At deck openings, provide reinforcing plates, steel reinforcing angles, or opening framing as indicated on drawings.
- G. Where deck changes direction, install 6 inch minimum wide sheet steel cover plates, of same thickness as deck. Fusion weld 12 inches on center maximum, or as indicated on drawings.
 - 1. At roof deck transitions, install ridge and valley plates, finish strips, end closures, and reinforcing channels.
- H. At openings between deck and walls, columns, and openings, provide sheet steel closures and angle flashings to close openings.
- I. Close openings above walls and partitions perpendicular to deck flutes with single row of foam cell closures.
- J. Position roof drain pans with flange bearing on top surface of deck. Fusion weld at each deck flute.

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3.3 PROTECTION

- A. Immediately after welding deck and other metal components in position, coat welds, burned areas, and damaged surface coating, with touch-up primer.
- B. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on both surfaces of prime-painted deck immediately after installation, and apply repair paint.
- C. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

3.4 FIELD QUALITY CONTROL

- A. Testing and Special Inspection Agency: Owner will engage a qualified testing and special inspection agency to perform tests and inspections.
- B. Field welds will be subject to inspection.
- C. Testing and Special Inspection agency will report inspection results promptly and in writing to Contractor and Architect.
- D. Remove and replace work that does not comply with specified requirements.
- E. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

END OF SECTION

SECTION 05 4000 - COLD-FORMED METAL FRAMING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Formed steel stud exterior wall and soffit framing.
- B. Formed steel joist framing and bridging.

1.2 RELATED REQUIREMENTS

- A. Section 05 1200 - Structural Steel Framing.
- B. Section 05 3100 - Steel Decking.
- C. Section 07 2100 - Thermal Insulation: Insulation within framing members.
- D. Section 07 2500 - Weather Barriers: Water-resistive barrier over sheathing.
- E. Section 07 6200 - Sheet Metal Flashing and Trim: Head and sill flashings.
- F. Section 07 9200 - Joint Sealants.
- G. Section 09 2116 - Gypsum Board Assemblies: Gypsum-based sheathing.
- H. Section 09 2216 - Non-Structural Metal Framing.

1.3 REFERENCE STANDARDS

- A. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members; 2016.
- B. AISI S200 - North American Standard for Cold-Formed Steel Framing - General Provisions; 2012.
- C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- E. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2017.

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- G. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2018.
- H. ASTM A780/A780M - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings; 2009 (Reapproved 2015).
- I. ASTM C955 - Standard Specification for Cold-Formed Steel Structural Framing Members; 2018, with Editorial Revision.
- J. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories; 2020.
- K. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.
- L. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2018.
- M. ASTM E488/E488M - Standard Test Methods for Strength of Anchors in Concrete Elements; 2015.
- N. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2014 (Amended 2015).
- O. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2021).
- P. AWS D1.3/D1.3M - Structural Welding Code - Sheet Steel; 2018.
- Q. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on standard framing members; describe materials and finish, product criteria, limitations.
- C. Product Data: Provide manufacturer's data on factory-made framing connectors, showing compliance with requirements.
- D. Qualification Data: For testing and inspection agency.
- E. Welding certificates.
- F. Product Test Reports: From a qualifying testing agency, unless otherwise stated, indicating that each of the following complies with requirements, based on evaluation of comprehensive tests for current products.

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1. Screw anchors.
2. Mechanical Fasteners.
3. Vertical deflection clips.
4. Rigid clips.
5. Miscellaneous structural clips and accessories.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Member of Steel Stud Manufacturers Association (SSMA): www.ssma.com/#sle.
- B. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.3/D1.3M and dated no more than 12 months before start of scheduled welding work.
- C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E329 to conduct the testing indicated.
- D. AISI S200 Specifications and Standards: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" and its "Standard for Cold-Formed Steel Framing - General Provisions."
- E. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Store cold-formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Metal Framing:
 1. CEMCO: www.cemcosteel.com.
 2. ClarkDietrich Building Systems: www.clarkdietrich.com.
 3. The Steel Network, Inc: www.SteelNetwork.com.
 4. Substitutions: See Section 01 6000 - Product Requirements.

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B. Framing Connectors and Accessories:

1. ClarkDietrich Building Systems: www.clarkdietrich.com.
2. Simpson Strong-Tie: www.strongtie.com/#sle.
3. The Steel Network, Inc: www.SteelNetwork.com.
4. Substitutions: See Section 01 6000 - Product Requirements.

2.2 FRAMING MATERIALS

A. Studs and Track: ASTM C955; studs formed to channel, "C" shape of web depths, flange width and thickness indicated, with punched web and stiffened flanges; U-shaped track in matching nominal width of stud, unpunched, with straight flanges of widths indicated.

1. Gauge and Depth: As indicated on drawings.
 - a. All 12, 14, and 16 gauge steel studs and track shall be formed from Grade 50 steel.
 - b. All 18 and 20 gauge steel studs and track shall be formed from Grade 33 steel.
2. Galvanized in accordance with ASTM A653/A653M, G60/Z180 coating.
3. Provide components fabricated from ASTM A1008/A1008M, Designation SS (structural steel).

B. Joists and Purlins: Fabricated from ASTM A653/A653M steel sheet, with G60/Z180 hot dipped galvanized coating.

1. Base Metal: Structural Steel (SS), Grade 50/340, Class 1.
2. Gauge and Depth: As indicated on drawings.

C. Framing Connectors: Factory-made, formed steel sheet.

1. Material: ASTM A653/A653M SS Grade 33 and 40 (minimum), with G90/Z275 hot dipped galvanized coating for base metal thickness less than 14 gauge, 0.068 inch (1.7mm), and factory punched holes and slots.
2. Vertical Deflection Clips: Provide mechanical anchorage devices to stud web that accommodate upward and downward vertical displacement of primary structure using slotted holes, shouldered screws or screws and anti-friction bushings, while maintaining structural performance of framing. Provide movement connections where indicated on drawings.
 - a. Vertical deflection clips and their connections must be able to resist the minimum loads indicated on the drawings.
 - b. Clips shall be selected and installed so that all required fastener holes are used.
3. Rigid Clips: Provide non-movement connections capable of accommodating combined vertical shear and out-of-plane tension loading through rigid mechanical attachment to stud web, where indicated on drawings.
 - a. Rigid clips and their connections must be able to resist the minimum loads indicated on the drawings.

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4. Drift Clips: Manufacturer's standard head clips, capable of isolating wall stud from upward and downward vertical displacement of primary structure
 - a. Drift clips and their connections must be able to resist the minimum loads indicated on the drawings.
 - b. Where top of stud wall terminates below structural roof, connect studs to structure in manner allowing vertical movement of deck without affecting studs; allow for minimum movement of 1 inch.
5. Wall Stud Bridging Connections: Provide mechanical load-transferring devices that accommodate wind load torsion and weak axis buckling induced by axial compression loads. Provide bridging connections as indicated on drawings.

2.3 FASTENERS

- A. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping steel drill screws.
 1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.
- B. Self-Drilling, Self-Tapping Screws, Bolts, Nuts and Washers: Hot dip galvanized per ASTM A153/A153M.
- C. Anchorage Devices: Screw Anchors and Expansion Anchors.
 1. Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.
 2. Screw anchors must be used in stem walls. Expansion anchors are not permitted to be installed in stem walls.
- D. Welding: Comply with AWS D1.1/D1.1M and AWS D1.3/D1.3M.

2.4 ACCESSORIES

- A. Bracing and Bridging: Formed sheet steel, thickness determined for conditions encountered; finish to match framing components.
- B. Furring Channel / Hat Channel: Manufacturer's standard high hat-shaped framing, capable of resisting imposed loading of metal wall panels, height as indicated on drawings.
- C. Supplementary framing: Stud kickers, knee braces, and girts.
- D. Web stiffeners and blocking.
- E. Anchor clips, foundation clips, and end clips.
- F. Hole reinforcing plates.

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- G. Backer plates.
- H. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.
- I. Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.
- B. Verify field measurements and adjust installation as required.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Install cold-formed metal framing according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions" and to manufacturer's written instructions unless more stringent requirements are indicated.
- B. Install components in accordance with manufacturers' instructions and ASTM C1007 requirements.
- C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.
 - 1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch.
- D. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened.
 - 1. Cut framing members by sawing or shearing; do not torch cut.
 - 2. Fasten cold-formed metal framing members by welding or screw fastening. Wire tying, clinch fastening, and riveting of framing members is not permitted.
 - a. Fabricate framing assemblies using jigs or templates where possible.
 - b. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
 - c. Locate mechanical fasteners and install according to Shop Drawings, and complying with requirements for spacing, edge distances, and screw penetration.

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- d. Edge of nearest web penetration shall be 12 inches minimum from end of stud.
- E. Construct corners using minimum of three studs.
- F. Install studs full length in one piece. Splicing of studs is not permitted, unless noted.
- G. Ends of studs shall have square cut ends unless shown otherwise and shall be seated tight against the tracks with a maximum gap tolerance of 1/8" between the end of the studs and the track.
- H. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
- I. Do not bridge building expansion and/or control joints with cold-formed metal framing. Independently frame both sides of joints.
- J. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.
- K. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
 - 1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
- L. Install insulation, specified in Section 07 2100 - "Thermal Insulation," in built-up exterior framing members, such as headers, sills, and multiple studs at openings, that are inaccessible on completion of framing work.
- M. Install intermediate studs above and below openings to align with wall stud spacing.
- N. Attach cross studs to studs for attachment of fixtures anchored to walls.
- O. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.
- P. Do not deviate from details shown on Drawings unless modifications have been submitted to and accepted by Architect.
- Q. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.
- R. Touch-up field welds and damaged galvanized surfaces with primer.
- S. Install supplementary framing, blocking, and bracing in stud framing indicated to support fixtures, equipment, services, casework, heavy trim, furnishings, and similar work requiring attachment to framing.

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1. If type of supplementary support is not indicated, comply with stud manufacturer's written recommendations and industry standards in each case, considering weight or load resulting from item supported.

3.3 INSTALLATION OF EXTERIOR NON-LOAD-BEARING WALL STUDS

- A. Install continuous top and bottom tracks sized to match studs. Align tracks accurately and securely anchor at corners and ends, and at spacings as indicated.
- B. Fasten both flanges of studs to top and bottom track, unless otherwise indicated. Space studs as indicated on drawings.
- C. Set studs plumb, except as needed for diagonal bracing or required for non-plumb walls or warped surfaces and similar requirements.
- D. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providing lateral support.
 1. Connect vertical deflection clips to bypassing studs and anchor to building structure.
 2. Connect drift clips to cold formed metal framing and anchor to building structure.
- E. Install horizontal bridging in wall studs, spaced in rows indicated on Drawings but not more than 48 inches apart. Fasten at each stud intersection.
 1. Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs.
- F. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, fasteners, and stud girts, to provide a complete and stable wall-framing system.

3.4 INSTALLATION OF JOISTS AND PURLINS

- A. Install framing components in accordance with manufacturer's instructions.
- B. Make provisions for erection stresses. Provide temporary alignment and bracing.
- C. Set ceiling joists parallel and level, with lateral bracing and bridging.
- D. Touch-up field welds and damaged galvanized surfaces with primer.

3.5 FIELD QUALITY CONTROL

- A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Field and shop welds will be subject to testing and inspecting.

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- C. Testing agency will report test results promptly and in writing to Contractor and Architect.
- D. Remove and replace work where test results indicate that it does not comply with specified requirements.
- E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.6 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A780/A780M and manufacturer's written instructions.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed metal framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 05 5000 - METAL FABRICATIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Shop fabricated steel and aluminum items.
- B. Prefabricated ladders.

1.2 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.
- B. Section 05 2100 - Steel Joist Framing: Structural joist bearing plates, including anchorage.
- C. Section 05 3100 - Steel Decking: Bearing plates for metal deck bearing, including anchorage.
- D. Section 09 9123 - Interior Painting: Paint finish.

1.3 REFERENCE STANDARDS

- A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2014 (2015 Errata).
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.
- D. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- E. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2013.
- F. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2014.
- G. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2014.
- H. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2017.

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- I. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.
- J. ASTM B211/B211M - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire; 2019.
- K. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021.
- L. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- M. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.
- N. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions; 2015a.
- O. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2012.
- P. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2021).
- Q. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; 2008.
- R. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).
- S. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).
- T. SSPC-SP 2 - Hand Tool Cleaning; 2018.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's data sheets on each ladder safety system product to be used, including installation instructions.
- C. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
 - 2. Design data: Submit drawings and supporting calculations, signed and sealed by a qualified professional structural engineer.

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- a. Include the following, as applicable:
 - 1) Design criteria.
 - 2) Engineering analysis depicting stresses and deflections.
 - 3) Member sizes and gauges.
 - 4) Details of connections.
 - 5) Support reactions.
 - 6) Bracing requirements.

D. Designer's Qualification Statement.

PART 2 PRODUCTS

2.1 MATERIALS - STEEL

- A. Steel Sections: ASTM A36/A36M.
- B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.
- C. Plates: ASTM A283/A283M.
- D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.
- E. Slotted Channel Framing: ASTM A653/A653M, Grade 33.
- F. Slotted Channel Fittings: ASTM A1011/A1011M.
- G. Bolts, Nuts, and Washers: ASTM A307, Grade A, plain.
- H. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.
- I. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- J. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- K. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.2 MATERIALS - ALUMINUM

- A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.
- B. Sheet Aluminum: ASTM B209/B209M, 5052 alloy, H32 or H22 temper.
- C. Aluminum-Alloy Bars: ASTM B211/B211M, 6061 alloy, T6 temper.
- D. Bolts, Nuts, and Washers: Stainless steel.

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- E. Welding Materials: AWS D1.2/D1.2M; type required for materials being welded.

2.3 FABRICATION

- A. Fit and shop assemble items in largest practical sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- D. Furnish components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.4 FABRICATED ITEMS

- A. Bollards: Steel pipe, concrete filled, precast crowned concrete cap, as detailed; prime paint finish.
- B. Ledge Angles, Shelf Angles, Channels, and Plates Not Attached to Structural Framing: For support of metal decking; prime paint finish.
- C. Lintels: As detailed; prime paint finish.
- D. Slotted Channel Framing: Fabricate channels and fittings from structural steel complying with the referenced standards; factory-applied, rust-inhibiting thermoset acrylic enamel finish.

2.5 FINISHES - STEEL

- A. Prime paint steel items.
 - 1. Exceptions: Galvanize items to be embedded in concrete and items to be embedded in masonry.
- B. Prepare surfaces to be primed in accordance with SSPC-SP2.
- C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- D. Prime Painting: One coat.
- E. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.
- F. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

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2.6 FINISHES - ALUMINUM

- A. Interior Aluminum Surfaces: Class I natural anodized.
- B. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

2.7 FABRICATION TOLERANCES

- A. Squareness: 1/8 inch maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch.
- C. Maximum Misalignment of Adjacent Members: 1/16 inch.
- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.2 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Furnish setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.3 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Perform field welding in accordance with AWS D1.1/D1.1M.
- D. Obtain approval prior to site cutting or making adjustments not scheduled.

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3.4 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

SECTION 05 5133 - METAL LADDERS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Shop-fabricated metal ladders.
- B. Prefabricated ladders.

1.2 RELATED REQUIREMENTS

- A. Section 09 9123 - Interior Painting: Paint finish.

1.3 REFERENCE STANDARDS

- A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2014 (2015 Errata).
- B. ANSI A14.3 - American National Standard for Ladders -- Fixed -- Safety Requirements; 2008.
- C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- D. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- E. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.
- F. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2013.
- G. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2014.
- H. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2014.
- I. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2017.
- J. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.
- K. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021.

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- L. ASTM B210/B210M - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes; 2019.
- M. ASTM B211/B211M - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire; 2019.
- N. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions; 2015a.
- O. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2012.
- P. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2021).
- Q. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; 2008.
- R. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).
- S. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).
- T. SSPC-SP 2 - Hand Tool Cleaning; 2018.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings:
 - 1. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
 - 2. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
- C. Designer's Qualification Statement.

PART 2 PRODUCTS

2.1 MATERIALS - STEEL

- A. Steel Sections: ASTM A36/A36M.
- B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.
- C. Plates: ASTM A283/A283M.

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- D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.
- E. Bolts, Nuts, and Washers: ASTM A307, plain.
- F. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.
- G. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- H. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- I. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.2 MATERIALS - ALUMINUM

- A. Extruded Aluminum: ASTM B211/B211M, 6063 alloy, T6 temper.
- B. Sheet Aluminum: ASTM B209/B209M, 5052 alloy, H32 or H22 temper.
- C. Aluminum-Alloy Drawn Seamless Tubes: ASTM B210/B210M, 6063 alloy, T6 temper.
- D. Bolts, Nuts, and Washers: Stainless steel.
- E. Welding Materials: AWS D1.2/D1.2M; type required for materials being welded.

2.3 FABRICATION

- A. Fit and shop assemble items in largest practical sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- D. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.4 PREFABRICATED LADDERS

- A. Prefabricated Ladder: Welded metal unit complying with ANSI A14.3; factory fabricated to greatest degree practical and in the largest components possible.
 - 1. Components: Manufacturer's standard rails, rungs, treads, handrails, returns, platforms and safety devices complying with the requirements of the MATERIALS article of this section.

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2. Materials: Aluminum; ASTM B211/B211M, 6063 alloy, T52 temper.
3. Manufacturers:
 - a. O'Keeffe's Inc; Model 500: www.okeeffes.com/#sle.
 - b. Substitutions: See Section 01 6000 - Product Requirements.

2.5 FINISHES - STEEL

- A. Prime paint steel items.
- B. Prime Painting: One coat.
- C. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.
- D. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

2.6 FINISHES - ALUMINUM

- A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

2.7 FABRICATION TOLERANCES

- A. Squareness: 1/8 inch maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch.
- C. Maximum Misalignment of Adjacent Members: 1/16 inch.
- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.2 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.

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- B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.3 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Obtain approval prior to site cutting or making adjustments not scheduled.

3.4 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

SECTION 06 1000 - ROUGH CARPENTRY

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Roofing nailers.
- B. Preservative treated wood materials.
- C. Fire retardant treated wood materials.
- D. Communications and electrical room mounting boards.
- E. Concealed wood blocking, nailers, and supports.

1.2 RELATED REQUIREMENTS

- A. Section 07 7200 - Roof Accessories: Prefabricated roof curbs.
- B. Section 09 2116 - Gypsum Board Assemblies: Gypsum-based sheathing.

1.3 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- B. ASTM D2898 - Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing; 2010 (Reapproved 2017).
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.
- D. AWPA U1 - Use Category System: User Specification for Treated Wood; 2017.
- E. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. PS 1 - Structural Plywood; 2009.
- G. PS 20 - American Softwood Lumber Standard; 2015.
- H. WWPA G-5 - Western Lumber Grading Rules; 2017.

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1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide technical data on wood preservative materials.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, and installation.

PART 2 PRODUCTS

2.1 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. 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.
 - 2. 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.

2.2 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

- 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. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
 - 1. Lumber: S4S, No. 2 or Standard Grade.
 - 2. Boards: Standard or No. 3.

2.3 CONSTRUCTION PANELS

- A. Wall Sheathing: See Section 09 2116.

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- B. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.
- C. 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.

2.4 ACCESSORIES

- A. Fasteners and Anchors:
 - 1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
 - 2. Anchors: Expansion shield and lag bolt type for anchorage to solid masonry or concrete.

2.5 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.
 - 1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
 - 2. 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.
- B. Fire Retardant Treatment:
 - 1. Exterior Type: AWWA U1, Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
 - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
 - b. Treat exterior rough carpentry items.
 - c. Do not use treated wood in direct contact with the ground.
 - 2. Interior Type A: AWWA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance

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with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.

- a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
- b. Treat rough carpentry items as indicated .
- c. Do not use treated wood in applications exposed to weather or where the wood may become wet.

C. Preservative Treatment:

1. Preservative Pressure Treatment of Lumber Above Grade: AWWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative.
 - a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
 - b. Treat lumber in contact with roofing, flashing, or waterproofing.
 - c. Treat lumber in contact with masonry or concrete.
2. Preservative Pressure Treatment of Plywood Above Grade: AWWPA U1, Use Category UC2 and UC3B, Commodity Specification F using waterborne preservative.
 - a. Kiln dry plywood after treatment to maximum moisture content of 19 percent.
 - b. Treat plywood in contact with roofing, flashing, or waterproofing.
 - c. Treat plywood in contact with masonry or concrete.

PART 3 EXECUTION

3.1 INSTALLATION - GENERAL

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.2 BLOCKING, NAILERS, AND SUPPORTS

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- 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 authorities having jurisdiction may be used in lieu of solid wood blocking.

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- C. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.
- 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 nonstructural 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.

3.3 INSTALLATION OF CONSTRUCTION PANELS

- A. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
 - 1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
 - 2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
 - 3. Install adjacent boards without gaps.

3.4 CLEANING

- A. Do not leave wood, shavings, sawdust, etc. on the ground or buried in fill.
- B. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

SECTION 06 2000 - FINISH CARPENTRY

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Finish carpentry items.
- B. Wood wall base.

1.2 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Support framing, grounds, and concealed blocking.
- B. Section 09 9123 - Interior Painting: Painting of finish carpentry items.

1.3 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.
- B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014, with Errata (2018).
- C. AWPA U1 - Use Category System: User Specification for Treated Wood; 2017.

1.4 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.

1.5 SUBMITTALS

- A. Product Data:
 - 1. Provide manufacturer's product data, storage and handling instructions for factory-fabricated units.
 - 2. Provide data on fire retardant treatment materials and application instructions.
- B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
 - 1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.

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2. Provide the information required by AWI/AWMAC/WI (AWS).
 3. Include certification program label.
- C. Samples: Submit two samples of wood trim 6 inch long.
- D. Manufacturer's Instructions: Provide manufacturer's installation instructions for factory-fabricated units.

1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
1. Company with at least one project within the past 5 years with value of woodwork within 20 percent of cost of woodwork for this project.
 2. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.
- B. Quality Certification:
1. Provide labels or certificates indicating that the work complies with AWI/AWMAC/WI (AWS) requirements for grade or grades specified.
 2. Provide designated labels on shop drawings as required by certification program.
 3. Provide designated labels on installed products as required by certification program.
 4. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.

1.7 MOCK-UPS

- A. Locate where directed.
- B. Mock-up may remain as part of the work.

1.8 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

2.1 FINISH CARPENTRY ITEMS

- A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI/AWMAC/WI (AWS) for Custom Grade.
- B. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.
- C. Interior Woodwork Items:
 - 1. Wall bases: See Finish Legend; prepare for finish indicated.
 - 2. Beams: White Maple, prepare for stained finish.

2.2 SHEET MATERIALS

- A. Softwood Plywood, Not Exposed to View: Any face species, medium density fiberboard core; PS 1 Grade A-B, glue type as recommended for application.
- B. Softwood Plywood, Exposed to View: Face species as indicated, plain sawn, medium density fiberboard core; PS 1 Grade A-B, glue type as recommended for application.

2.3 FASTENERS

- A. Fasteners: Of size and type to suit application; countersink and conceal finish in exposed locations.

2.4 WOOD TREATMENT

- A. Factory-Treated Lumber: Comply with requirements of AWPA U1 - Use Category System for pressure impregnated wood treatments determined by use categories, expected service conditions, and specific applications.
- B. Fire Retardant Treatment (FR-S Type): Chemically treated and pressure impregnated; capable of providing flame spread index of 25, maximum, and smoke developed index of 450, maximum, when tested in accordance with ASTM E84.
- C. Provide identification on fire retardant treated material.
- D. Redry wood after pressure treatment to maximum 6 percent moisture content.

2.5 SITE FINISHING MATERIALS

- A. Finishing Materials: Comply with AWI/AWMAC/WI (AWS), unless noted otherwise.

2.6 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.

2.7 SHOP FINISHING

- A. Finish work in accordance with AWI/AWMAC/WI (AWS), Section 5 - Finishing for grade specified and as follows:
 - 1. Transparent:
 - a. System - 12, Polyurethane, Water-based.
 - b. Stain: As selected by Architect.
 - c. Sheen: Satin.
- B. Back prime woodwork items to be field finished, prior to installation.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify adequacy of backing and support framing.

3.2 INSTALLATION

- A. Install custom fabrications in accordance with AWI/AWMAC/WI (AWS) requirements for grade indicated.
- B. Set and secure materials and components in place, plumb and level.
- C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

3.3 PREPARATION FOR SITE FINISHING

- A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.

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- B. Site Finishing: See Section 09 9123.
- C. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

END OF SECTION

SECTION 06 4100 - ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Fabricated cabinet units.
- B. Hardware.

1.2 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Support framing, grounds, and concealed blocking.
- B. Section 12 3600 - Countertops.

1.3 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.
- B. AWI (QCP) - Quality Certification Program; Current Edition.
- C. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014, with Errata (2018).
- D. BHMA A156.9 - American National Standard for Cabinet Hardware; 2010.
- E. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.
- F. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films; 2015.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a preinstallation meeting not less than one week before starting work of this section; require attendance by all affected installers.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
 - 1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.

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2. Provide information as required by AWI/AWMAC/WI (AWS).
 3. Include certification program label.
- C. Product Data: Provide data for hardware accessories.
- D. Samples: Submit actual samples of architectural cabinet construction, minimum 12 inches square, illustrating proposed cabinet, countertop, and shelf unit substrate and finish.
- E. Samples: Submit samples for verification of plastic laminates, wood veneers, and PVC edge material.
- F. Certificate: Submit labels and certificates required by quality assurance and quality control programs.

1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
1. Company with at least one project in the past 5 years with value of woodwork within 20 percent of cost of woodwork for this Project.
 2. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.
- B. Installer Qualifications: Certified participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.
- C. Quality Certification:
1. Comply with AWI (QCP) woodwork association quality certification service/program in accordance with requirements for work specified in this section: www.awiqcp.org/#sle.
 - a. This project should be registered by the general contractor or by the woodworker supplying for the project.
 2. Provide labels or certificates indicating that the installed work complies with AWI/AWMAC/WI (AWS) requirements for grade or grades specified.
 3. Provide designated labels on shop drawings as required by certification program.
 4. Provide designated labels on installed products as required by certification program.
 5. Receive a minimum of one AWI (QCP) compliance inspection.
 6. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.
 7. Replace, repair, or rework all work for which certification is refused.
 8. Gaps in excess of the AWS due to the radius of edgebanding is to be excluded from absolute compliance as a reasonable assessment when the edgebanding Overlap is zero.

1.7 MOCK-UPS

- A. Provide mock-up of base cabinet drawer unit, including hardware.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protect units from moisture damage.
- B. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.9 FIELD CONDITIONS

- A. Field Measurements: Where casework is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings.
- B. Do not deliver or install casework until building is enclosed, wet work is complete, and HVAC system is operating. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.
- C. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that casework can be supported and installed as indicated.

1.10 WARRANTY

- A. Provide a written warranty that all casework materials and workmanship will be free from defects for a period of one year from the date of Substantial Completion of the project. Any defective work is to be repaired or replaced at no cost to the Owner.
 - 1. If the contractor elects to furnish and install the optional wood drawer box in lieu of the metal drawer system, provide an extended twenty year warranty on the drawer box and drawer slides.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Single Source Responsibility: Provide and install this work from single fabricator.

2.2 CABINETS

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS), unless noted otherwise.
 - 1. All casework is custom grade except casework with wood grain (or any directional) laminate or wood veneer faces. In these cases, grain matching of the casework faces, including fillers, will be Premium Grade, and all other details will remain Custom Grade.
- B. Cabinets:
 - 1. Finish - Exposed Exterior Surfaces: Decorative laminate.
 - 2. Finish - Exposed Interior Surfaces: Decorative laminate.
 - 3. Finish - Semi-Exposed Surfaces: Decorative laminate
 - 4. Finish - Concealed Surfaces: Manufacturer's option.
 - 5. Door and Drawer Front Edge Profiles: Square edge with thick applied band.
 - 6. Casework Construction Type: Type A - Frameless.
 - 7. Interface Style for Cabinet and Door: Style 1 - Overlay; reveal overlay.
 - 8. Grained Face Layout for Cabinet and Door Fronts: Flush panel.
 - a. Premium Grade:
 - 1) Provide well-matched doors, drawer fronts and false fronts across multiple cabinet faces in one elevation.
 - 9. Cabinet Style: Flush overlay.
 - 10. Cabinet Doors and Drawer Fronts: Flush style.
 - 11. Drawer Side Construction: Manufacturer brackets and screws for metal box system.

2.3 PANELING

- A. Quality Standard: Custom Grade, in accordance AWI/AWMAC/WI (AWS), unless noted otherwise.

2.4 WOOD-BASED COMPONENTS

- A. Wood fabricated from old growth timber is not permitted.

2.5 LAMINATE MATERIALS

- A. Manufacturers:
 - 1. See Finish Legend

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- B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.

2.6 COUNTERTOPS

- A. Countertops: See Section 12 3600.

2.7 ACCESSORIES

- A. Adhesive: Type recommended by fabricator to suit application.
- B. Plastic Edge Banding: Extruded PVC, flat shaped; smooth finish; of width to match component thickness.
 - 1. Color: As indicated on drawings.
 - 2. Use at all exposed edges.
 - 3. Thickness: 3 mm, unless otherwise indicated.
- C. Fasteners: Size and type to suit application.
- D. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel or chrome-plated finish in exposed locations.
- E. Concealed Joint Fasteners: Threaded steel.

2.8 HARDWARE

- A. Hardware: BHMA A156.9, types as recommended by fabricator for quality grade specified.
- B. Adjustable Shelf Supports: Standard side-mounted system using multiple holes for pin supports and locking dual pin supports, clear plastic finish, for nominal 1 inch spacing adjustments.
- C. Drawer and Door Pulls: "U" shaped wire pull, steel with chrome finish, 4 inch centers. 12 inch centers for all tall cabinets and wardrobe cabinets.
- D. Cabinet Locks: Keyed cylinder, two keys per lock, master keyed, steel with chrome finish.
 - 1. Locations: Provide on all doors and drawers unless noted otherwise in drawings.
- E. Door Stop / Restraint: Provide chain stop in all locations where cabinet doors hit adjacent gypsum board or casework.
- F. Wiring Management: 3" plastic grommets and caps with slot for wire passage in metallic silver finish.

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- G. Counter Supports: Provide as required every 36" minimum.
1. Decorative Support: Mockett SWS1 in Metallic Silver finish, or equal on Reception and Media Center Desks only.
 2. Transaction Top Support: Stainless Steel tube support, 1 inch diameter.
 3. Hidden Support: Concealed steel L-angle in Casework or stud wall, sized per over hang requirements.
- H. Metal Drawer Systems: Integrated drawer slide and side.
1. Side Type: Single wall.
 2. Drawer Side Height: Maximum available for height of drawer indicated. Provide optional side extensions or rails for deep or file drawers.
 3. Extension Type: Full extension with overtravel.
 4. Static Load Capacity: Heavy Duty grade.
 5. Mounting: Side mounted epoxy coated steel box system.
 6. Stops: Integral type.
 7. Features: Provide file drawer hangers, metal box side extension/rails, steel ball bearings, self closing/stay closed and white epoxy finish type.
 8. Map Drawers (any drawer over 26" wide): Regular extension, epoxy coated, bottom mounted slide with stay-close feature.
 9. Manufacturers:
 - a. Blum Inc; MetaBox; Drawer System 330 Series: www.blum.com
 - b. Grass America Inc; Integra: www.grassusa.com/#sle.
 - c. Grass America Inc; Zargen: www.grassusa.com/#sle.
- I. Hinges: Butt (institutional) type, steel with polished finish.

2.9 FABRICATION

- A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.
- B. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.
- C. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.
- D. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.

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- E. Matching Wood Grain: Comply with requirements of quality standard for specified Grade and as follows:
 - 1. Provide center matched panels at each elevation.
 - 2. Provide sequence matching across each elevation.
- F. Provide cutouts for plumbing fixtures and outlet boxes. Verify locations of cutouts from on-site dimensions. Prime paint cut edges.

2.10 SHOP FINISHING

- A. Sand work smooth and set exposed nails and screws.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify adequacy of backing and support framing.
- B. Verify location and sizes of utility rough-in associated with work of this section.

3.2 INSTALLATION

- A. Install work in accordance with AWI/AWMAC/WI (AWS) requirements for grade indicated.
- B. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.
- C. Caulk between casework and finished wall to be White of the paintable type, caulk between sink and casework and applied splashes to be clear silicone.
- D. Use concealed joint fasteners to align and secure adjoining cabinet units.
- E. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.
- F. Secure cabinets to floor using appropriate angles and anchorages.
- G. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

3.3 ADJUSTING

- A. Test installed work for rigidity and ability to support loads.
- B. Adjust moving or operating parts to function smoothly and correctly.

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3.4 CLEANING

- A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION

SECTION 06 8316 - FIBERGLASS REINFORCED PANELING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Fiberglass reinforced plastic panels.
- B. Trim.

1.2 REFERENCE STANDARDS

- A. 9 CFR 416.2 - Regulatory Requirements Under the Federal Meat Inspection Act and the Poultry Products Inspection Act, Part 416-Sanitation; current edition.
- B. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2016.
- C. ASTM D5319 - Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels; 2012.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.
- E. FM 4880 - Class 1 Fire Rating of Insulated Wall or Wall and Roof/Ceiling Panels, Interior Finish Materials or Coatings and Exterior Wall Systems; 2010.

1.3 SUBMITTALS

- A. See Section 01 3000 - 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. Samples: Submit two samples 6 by 6 inch in size illustrating material and surface design of panels.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Store panels flat, indoors, on a clean, dry surface. Remove packaging and allow panels to acclimate to room temperature for 48 hours prior to installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

2.2 PANEL SYSTEMS

A. Wall Panels:

1. Size, thickness, color, and design: Reference Finish Legend in Drawings.
2. Attachment Method: Adhesive only, with trim and sealant in joints.

2.3 MATERIALS

A. Panels: Fiberglass reinforced plastic (FRP), complying with ASTM D5319.

1. Surface Burning Characteristics: Maximum flame spread index of 25 and smoke developed index of 450; when system tested in accordance with ASTM E84.
2. Class 1 fire rated when tested in accordance with FM 4880.
3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
4. Sanitation and Cleanability: Comply with 9 CFR 416.2.

B. Trim: Vinyl; color coordinating with panel.

C. Sealant: Type recommended by panel manufacturer; white.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions and substrate flatness before starting work.
- B. Verify that substrate conditions are ready to receive the work of this section.

3.2 INSTALLATION - WALLS

- A. Install panels in accordance with manufacturer's instructions.
- B. Cut and drill panels with carbide tipped saw blades, drill bits, or snips.
- C. Apply adhesive to the back side of the panel using trowel as recommended by adhesive manufacturer.

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- D. Apply panels to wall with seams plumb and pattern aligned with adjoining panels.
- E. Install panels with manufacturer's recommended gap for panel field and corner joints.
- F. Place trim on panel before fastening edges, as required.
- G. Fill channels in trim with sealant before attaching to panel.
- H. Install trim with adhesive and screws or nails, as required.
- I. Seal gaps at floor, ceiling, and between panels with applicable sealant to prevent moisture intrusion.
- J. Remove excess sealant after paneling is installed and prior to curing.

END OF SECTION

SECTION 07 1300 - SHEET WATERPROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Self-adhered HDPE sheet membrane, post applied.

1.2 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete substrate.
- B. Section 07 2100 - Thermal Insulation: Insulation used for protective cover.
- C. Section 22 1006 - Plumbing Piping Specialties: Roof drain and plumbing vent flashing flanges.

1.3 REFERENCE STANDARDS

- A. ASTM C836/C836M - Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course; 2015.
- B. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016.
- C. ASTM D751 - Standard Test Methods for Coated Fabrics; 2019.
- D. ASTM D882 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting; 2012.
- E. ASTM D1876 - Standard Test Method for Peel Resistance of Adhesives (T-Peel Test); 2008 (Reapproved 2015).
- F. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2019.
- G. ASTM D5295/D5295M - Standard Guide for Preparation of Concrete Surfaces for Adhered (Bonded) Membrane Waterproofing Systems; 2014.
- H. ASTM D5385/D5385M - Standard Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes; 1993 (Reapproved 2014).
- I. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- J. NRCA (WM) - The NRCA Waterproofing Manual; 2005.

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1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for membrane, cover board (as required) and drainage panel.
- 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.
- F. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.6 FIELD CONDITIONS

- A. Maintain ambient temperatures above 40 degrees F for 24 hours before and during application and until liquid or mastic accessories have cured.

1.7 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Contractor to correct defective Work within period of five years after Date of Substantial Completion; remove and replace materials concealing waterproofing at no extra cost to Owner.
- 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

2.1 SHEET WATERPROOFING APPLICATIONS

- A. Self-Adhered HDPE Sheet Membrane, Post Applied:

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1. Location: As indicated on drawings.
2. Cover with drainage panel and insulation.

2.2 SHEET WATERPROOFING MATERIALS

- A. Self-Adhered HDPE Sheet Membrane, Post-Applied: Recommended by manufacturer for placement on outside face of below grade concrete and concrete masonry unit (CMU) backfilled walls and select horizontal applications.
1. Sheet Thickness: 60 mil, 0.060 inch, minimum, and with 20 mil, 0.020 inch thick adhesive.
 2. Low Temperature Flexibility: Unaffected when tested in accordance with ASTM D1970/D1970M at minus 25 degrees F, 180 degree bend on 1 inch mandrel.
 3. Hydrostatic Resistance: Resists pressure of 400 psi when tested in accordance with ASTM D751.
 4. Elongation at Break: 300 percent, minimum, measured in accordance with ASTM D412.
 5. Tensile Strength, Film: 5,000 psi, minimum, measured in accordance with ASTM D882.
 6. Water Vapor Permeance: Less than 0.5 perm, measured in accordance with ASTM E96/E96M.
 7. Adhesives, Sealants, Tapes, and Accessories: As recommended by membrane manufacturer.
 8. Products:
 - a. GCP Applied Technologies: www.gcpat.com/#sle.
 - b. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
 - c. Substitutions: See Section 01 6000 - Product Requirements.

2.3 ACCESSORIES

- A. Sealant for Cracks and Joints In Substrates: Resilient elastomeric joint sealant compatible with substrates and waterproofing materials.
- B. Protection Board: Provide type capable of preventing damage to waterproofing due to backfilling and construction traffic.
1. Asphalt impregnated wood fiberboard, 1/4 inch thick.
 2. Polystyrene foam board, 1 inch thick.
- C. Drainage Panel: Drainage layer with geotextile filter fabric on earth side.
1. Composition: Dimpled polystyrene, polyethylene, or polypropylene core; polypropylene filter fabric.
 2. Products:

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- a. Advanced Building Products, Inc; ABP AdvancedDrain Polymeric Drainage Mat:
www.advancedbuildingproducts.com/#sle.
- b. W.R. Meadows, Inc; Mel-Drain: www.wrmeadows.com/#sle.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions are acceptable prior to starting work.
- B. Verify substrate surfaces are durable; free of matter detrimental to adhesion or application of waterproofing system.
- C. Verify that items penetrating surfaces to receive waterproofing are securely installed.

3.2 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.
- C. Do not apply waterproofing to surfaces unacceptable to membrane manufacturer.
- D. Seal moving cracks with sealant and nonrigid filler, using procedures recommended by sealant and waterproofing manufacturers.
- E. Surfaces for Adhesive Bonding: Apply surface conditioner at a rate recommended by manufacturer, and protect conditioner from rain or frost until dry.
- F. Concrete Surfaces for Adhesive Bonding: Prepare concrete substrate in accordance with ASTM D5295/D5295M.
 1. Remove substances that inhibit adhesion including form release agents, curing compounds admixtures, laitance, moisture, dust, dirt, grease and oil.
 2. Repair surface defects including honeycombs, fins, tie holes, bug holes, sharp offsets, ruttled cracks, ragged corners, deviations in surface plane, spalling and delaminations, as described in reference standard.
 3. Remove and replace areas of defective concrete; see Section 03 3000.
 4. Prepare concrete for adhesive bonded waterproofing using mechanical or chemical methods described in referenced standard.
 5. Test concrete surfaces as described in referenced standards, and verify surfaces are ready to receive adhesive bonded waterproofing membrane system.

3.3 INSTALLATION - MEMBRANE

- A. Install membrane waterproofing in accordance with manufacturer's instructions and NRCA (WM) applicable requirements.
- B. Roll out membrane, and minimize wrinkles and bubbles.
- C. Self-Adhering Membrane: Remove release paper layer, and roll out onto substrate with a mechanical roller to provide full contact bond.
- D. Overlap edges and ends, minimum 3 inches, seal permanently waterproof by method recommended by manufacturer, and apply uniform bead of sealant to joint edge.
- E. Reinforce membrane with multiple thickness of membrane material over joints, whether joints are static or dynamic.
- F. Weather lap joints on sloped substrate in direction of drainage, and seal joints and seams.
- G. Flexible Flashings: Seal items watertight that penetrate through waterproofing membrane with flexible flashings.
- H. Seal membrane and flashings to adjoining surfaces.
 - 1. Install termination bar along edges.
 - 2. Install counterflashing over exposed edges.

3.4 INSTALLATION - DRAINAGE PANEL

- A. Place drainage panel directly against membrane, butt joints, place to encourage drainage downward; scribe and cut boards around projections, penetrations, and interruptions.
- B. Place protection board directly against drainage panel; butt joints, and scribe and cut boards around projections, penetrations, and interruptions.
- C. Adhere drainage panel to substrate with compatible adhesive.

3.5 PROTECTION

- A. Do not permit traffic over unprotected or uncovered membrane.

END OF SECTION

SECTION 07 1400 - FLUID-APPLIED WATERPROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Water-based asphalt emulsion waterproofing.

1.2 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete substrate.

1.3 ABBREVIATIONS

- A. NRCA - National Roofing Contractors Association.

1.4 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 D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016.
- C. ASTM D4541 - Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers; 2009.
- D. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- E. NRCA (WM) - The NRCA Waterproofing Manual; 2005.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for membrane, surface conditioner, flexible flashings, joint cover sheet, and joint and crack sealants.
- C. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and acceptable installation temperatures.
- D. Warranty Documentation:
 - 1. Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

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2. Submit installer's documentation that installation complies with warranty conditions for the field-applied waterproofing.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of documented experience.

1.7 FIELD CONDITIONS

- A. Maintain ambient temperatures above 40 degrees F for 24 hours before and during application and until cured.

1.8 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Contractor shall correct defective Work within a five year period after Date of Substantial Completion; remove and replace materials concealing waterproofing at no cost to Owner.
- C. Installer Warranty: Provide [] warranty for waterproofing failing to resist penetration of water commencing on Date of Substantial Completion. Complete forms in []'s name and register with installer.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Water-Based Asphalt Emulsion Waterproofing:
 1. Carlisle Coatings & Waterproofing, Inc: www.carlisleccw.com/#sle.
 2. W.R. Meadows, Inc: www.wrmeadows.com/#sle.
 3. Substitutions: See Section 01 6000 - Product Requirements.

2.2 FLUID-APPLIED WATERPROOFING MATERIALS

- A. Water-Based Asphalt Emulsion Waterproofing:
 1. Cured Thickness: 60 mil, 0.060 inch, minimum.
 2. Suitable for installation over concrete substrates.

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3. VOC Content: Less than 20 g/L when tested in accordance with 40 CFR 59, Subpart D (EPA Method 24).
4. Water Vapor Permeability: 0.02 perm, maximum, measured in accordance with ASTM E96/E96M.
5. Peel Adhesion: Measured in accordance with ASTM D412, for following substrates.
 - a. High Density Polyethylene Film: 12.2 pound-inches, minimum.
 - b. Concrete and Concrete Masonry: 14.1 pound-inches, minimum.
 - c. Glass Fiber Mat Faced Gypsum Board: 13.1 pound-inches, minimum.
6. Adhesion: 150 psi, minimum, measured in accordance with ASTM D4541.
7. Products:
 - a. Carlisle Coatings & Waterproofing, Inc; BarriCoat-R: www.carlisleccw.com/#sle.
 - b. W.R. Meadows, Inc; MEL-ROL LM: www.wrmeadows.com/#sle.

2.3 ACCESSORIES

- A. Surface Conditioner: Water-based type, compatible with membrane compound; as recommended by membrane manufacturer.
- B. Sealant for Joints and Cracks in Substrate: Type compatible with waterproofing material and as recommended by waterproofing manufacturer.
- C. Cant Strips: Premolded composition material.

PART 3 EXECUTION

3.1 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.
- C. Verify that substrate surfaces are smooth, free of honeycomb or pitting, and not detrimental to full contact bond of waterproofing materials.
- D. Verify that items penetrating surfaces to receive waterproofing are securely installed.

3.2 PREPARATION

- A. Protect adjacent surfaces from damage not designated to receive waterproofing.

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- B. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions.
- C. Do not apply waterproofing to surfaces unacceptable to waterproofing manufacturer.
- D. Fill non-moving joints and cracks with a filler compatible with waterproofing materials.
- E. Seal moving cracks with sealant and non-rigid filler, using procedures recommended by sealant and waterproofing manufacturers.
- F. Install cant strips at inside corners.

3.3 INSTALLATION

- A. Install waterproofing to specified minimum thickness in accordance with manufacturers instructions and NRCA (WM) applicable requirements.
- B. Apply primer or surface conditioner at a rate recommended by manufacturer, and protect conditioner from rain or frost until dry.
- C. At joints and cracks less than 1/2 inch in width including joints between horizontal and vertical surfaces, apply 12 inch wide strip of joint cover sheet.
- D. At joints from 1/2 inch to 1 inch in width, loop joint cover sheet down into joint between 1-1/4 inch to 1-3/4 inch, and extend sheet at least 6 inches on either side of expansion joint.
- E. Center joint cover sheet over joints, roll sheet into 1/8 inch thick coating of waterproofing material and apply second coat over sheet extending at least 6 inches beyond sheet edges.
- F. Apply extra thickness of waterproofing material at corners, intersections, and angles.
- G. Flexible Flashings: Seal items watertight that penetrate through waterproofing membrane with flexible flashings.
- H. Seal membrane and flashings to adjoining surfaces.

3.4 PROTECTION

- A. Do not permit traffic over unprotected or uncovered membrane.

END OF SECTION

SECTION 07 2100 - THERMAL INSULATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Board insulation at cavity wall construction, perimeter foundation wall, underside of floor slabs, and exterior wall behind stucco wall finish.
- B. Board insulation at cavity wall construction, perimeter foundation wall, and exterior wall behind metal panel wall finish.
- C. Batt insulation in exterior wall and roof construction.

1.2 RELATED REQUIREMENTS

- A. Section 09 2116 - Gypsum Board Assemblies: Acoustic insulation inside walls and partitions.

1.3 REFERENCE STANDARDS

- A. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation; 2015.
- B. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2018.
- 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; 2018a.
- E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.
- F. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C; 2016a.
- G. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components; 2019.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.5 FIELD CONDITIONS

- A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.1 APPLICATIONS

- A. Insulation at Perimeter of Foundation: Extruded polystyrene (XPS) board.
- B. Insulation Over Metal Stud Framed Walls, Continuous: Extruded polystyrene (XPS) board.
- C. Insulation in Metal Framed Walls: Batt insulation with no vapor retarder.

2.2 FOAM BOARD INSULATION MATERIALS

- A. Extruded Polystyrene (XPS) Board Insulation (IN-06): Comply with ASTM C578 with either natural skin or cut cell surfaces.
 - 1. Type and Compressive Resistance: Type IV, 25 psi (173 kPa), minimum.
 - 2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
 - 3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
 - 4. Type and Thermal Resistance, R-value: Type IV, 5.0 (0.88), minimum, per 1 inch thickness at 75 degrees F mean temperature.
 - 5. Board Edges: Square.
 - 6. Type and Water Absorption: Type XII, 0.3 percent by volume, maximum, by total immersion.
 - 7. Products:
 - a. DuPont de Nemours, Inc: building.dupont.com/#sle.
 - b. Kingspan Insulation LLC; GreenGuard XPS Type IV, 25 psi: www.kingspan.com/#sle.
 - c. Owens Corning Corporation; FOAMULAR Extruded Polystyrene (XPS) Insulation: www.ocbuildingspec.com/#sle.
- B. Extruded Polystyrene (XPS) Continuous Insulation (CI) Board (IN-03): Comply with ASTM C578, and manufactured using carbon black technology.
 - 1. Type and Compressive Resistance: Type IV, 25 psi (173 kPa), minimum.
 - 2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.

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3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
 4. Type and Thermal Resistance, R-value: Type IV, 5.6 (0.98), minimum, per 1 inch thickness at 75 degrees F mean temperature.
 5. Board Edges: square, at long edges.
 6. Products:
 - a. DuPont de Nemours, Inc: building.dupont.com/#sle.
 - b. Kingspan Insulation LLC; GreenGuard XPS Type IV, 25 psi: www.kingspan.com/#sle.
 - c. Owens Corning Corporation: www.ocbuildingspec.com/#sle.
- C. Rigid Cellular Polyisocyanurate (**ISO**) Thermal Insulation Board (**IN-04 & IN-05**) with Facers Both Sides: Complying with ASTM C1289.
1. Classifications:
 - a. Type II: Faced with either cellulosic facers or glass fiber mat facers on both major surfaces of the core foam.
 - 1) Class 1 - Faced with glass fiber reinforced cellulosic facers on both major surfaces of core foam.
 - 2) Compressive Strength: Classes 1-2-3, Grade 3 - 25 psi (172 kPa), minimum.
 - 3) Thermal Resistance, R-value: At 1-1/2 inch thick; Class 1, Grades 1-2-3 - 8.4 (1.48), minimum, at 75 degrees F.
 2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
 3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
 4. Board Size: 48 inch by 96 inch.
 5. Board Thickness: As indicated.
 6. Thermal Resistance: R-value of 6.3 per inch, minimum.
 7. Board Edges: Square.
 8. Products:
 - a. Atlas Roofing Corporation; EnergyShield Pro Continuous Wall Insulation: www.atlasroofing.com/#sle.
 - b. Hunter Panels; Xci Foil (Class A): www.hunterpanels.com/#sle.

2.3 MINERAL FIBER BLANKET INSULATION MATERIALS

- A. Flexible Glass Fiber Blanket Thermal Insulation (**IN-01**): Preformed insulation, complying with ASTM C665; friction fit.
1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
 2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
 3. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.

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4. Formaldehyde Content: Zero.
5. Thermal Resistance: R-value of 19.
6. Thickness: 6 inch.
7. Facing: Unfaced.
8. Products:
 - a. CertainTeed Corporation: www.certainteed.com.
 - b. Johns Manville: www.jm.com.
 - c. Knauf Insulation: www.knaufinsulation.com/#sle.
 - d. Owens Corning Corporation: www.ocbuildingspec.com/#sle.

2.4 ACCESSORIES

- A. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inch wide.
- B. Insulation Fasteners: Lengths of unfinished, 13 gauge, 0.072 inch high carbon spring steel with chisel or mitered tips, held in place by tension, length to suit insulation thickness and substrate, capable of securely supporting insulation in place.
- C. Adhesive: Type recommended by insulation manufacturer for application.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.
- B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.2 BOARD INSTALLATION AT FOUNDATION PERIMETER

- A. Adhere a 6 inches wide strip of polyethylene sheet over construction, control, and expansion joints with double beads of adhesive each side of joint.
 1. Tape seal joints.
 2. Extend sheet full height of joint.
- B. Install boards horizontally on foundation perimeter.
- C. Extend boards over expansion joints, unbonded to foundation on one side of joint.

- D. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.3 BOARD INSTALLATION AT EXTERIOR WALLS

- A. Adhere 6 inches wide strip of polyethylene sheet over expansion joints with double beads of adhesive each side of joint.
- B. Install boards horizontally on walls.
 - 1. Place boards to maximize adhesive contact.
 - 2. Install in running bond pattern.
 - 3. Butt edges and ends tightly to adjacent boards and protrusions.
- C. Extend boards over expansion joints, unbonded to wall on one side of joint.
- D. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
- E. Place 6 inches wide polyethylene sheet at perimeter of wall openings, from adhesive vapor retarder bed to window and door frames, and tape seal in place to ensure continuity of vapor retarder and air seal.
- F. Tape insulation board joints.

3.4 BOARD INSTALLATION AT CAVITY WALLS

- A. Adhere a 6 inches wide strip of polyethylene sheet over expansion joints with double beads of adhesive each side of joint.
 - 1. Tape seal joints between sheets.
 - 2. Extend sheet full height of joint.
- B. Apply adhesive to back of boards:
 - 1. Three continuous beads per board length.
 - 2. Full bed 1/8 inch thick.
- C. Install boards to fit snugly between wall ties.
- D. Install boards horizontally on walls.
 - 1. Place boards to maximize adhesive contact.
 - 2. Install in running bond pattern.
 - 3. Butt edges and ends tightly to adjacent boards and protrusions.
 - 4. Place impale fastener locking discs.
- E. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

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- F. Place 6 inches wide polyethylene sheet at perimeter of wall openings, from adhesive vapor retarder bed to window and door frames, and tape seal in place to ensure continuity of vapor retarder and air seal.

3.5 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. Retain insulation batts in place with spindle fasteners at 12 inches on center.

3.6 PROTECTION

- A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION

SECTION 07 2119 - FOAMED-IN-PLACE INSULATION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Foamed-in-place insulation.
 - 1. In exterior wall crevices.
 - 2. In hollow metal door frames.
 - 3. In door headers.
 - 4. In other areas indicated on plans.

1.2 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; 2018b.
- D. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- E. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials; 2013.

1.3 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide product description, insulation properties, overcoat properties, and preparation requirements.
- C. Manufacturer's Installation Instructions: Indicate special procedures, and perimeter conditions requiring special attention.

1.4 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 of dew point.

PART 2 PRODUCTS

2.1 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. Thermal Resistance: R-value of 5.0, minimum, per 1 inch thickness at 75 degrees F mean temperature when tested in accordance with ASTM C518.
 - 2. Water Vapor Permeance: Vapor retarder; 2 perms, maximum, when tested at intended thickness in accordance with ASTM E96/E96M, desiccant method.
 - 3. Water Absorption: Less than 2 percent by volume, maximum, when tested in accordance with ASTM D2842.
 - 4. Air Permeance: 0.04 cfm per square foot, maximum, when tested at intended thickness in accordance with ASTM E2178 at 1.57 psf.
 - 5. Closed Cell Content: At least 90 percent.
 - 6. Surface Burning Characteristics: Flame spread/smoke developed index of 25/450, maximum, when tested in accordance with ASTM E84.

PART 3 EXECUTION

3.1 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 or overcoat adhesion.

3.2 PREPARATION

- A. Mask and protect adjacent surfaces from over spray or dusting.
- B. Apply primer in accordance with manufacturer's instructions.

3.3 APPLICATION

- A. Apply insulation in accordance with manufacturer's instructions.
- B. Apply insulation by spray method, to a uniform monolithic density without voids.
- C. Where applied to voids and gaps assure space for expansion to avoid pressure on adjacent materials that may bind operable parts.

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- D. Trim excess away for applied trim or remove as required for continuous sealant bead.

3.4 PROTECTION

- A. Do not permit subsequent construction work to disturb applied insulation.

END OF SECTION

SECTION 07 2400 - EXTERIOR INSULATION AND FINISH SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Composite wall cladding of rigid insulation and reinforced finish coating, Class PB.
- B. Drainage and water-resistive barriers behind insulation board.

1.2 RELATED REQUIREMENTS

- A. Section 07 9200 - Joint Sealants: Sealing joints between EIFS and adjacent construction and penetrations through EIFS.

1.3 REFERENCE STANDARDS

- A. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus; 2016.
- B. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2019.
- C. ASTM C297/C297M - Standard Test Method for Flatwise Tensile Strength of Sandwich Constructions; 2016.
- D. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2018.
- E. ASTM C1397 - Standard Practice for Application of Class PB Exterior Insulation and Finish Systems (EIFS) and EIFS with Drainage; 2013 (Reapproved 2019).
- F. ASTM D968 - Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive; 2017.
- G. ASTM D2247 - Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity; 2015.
- H. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2016.
- I. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2016).
- J. ASTM E2273 - Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies; 2018.
- K. ASTM E2486/E2486M - Standard Test Method for Impact Resistance of Class PB and PI Exterior Insulation and Finish Systems (EIFS); 2013 (Reapproved 2018).

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- L. ASTM G153 - Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials; 2013.
- M. ASTM G155 - Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials; 2013.
- N. ICC-ES AC219 - Acceptance Criteria for Exterior Insulation and Finish Systems; 2009, with Editorial Revision (2014).
- O. ICC-ES AC235 - Acceptance Criteria for EIFS Clad Drainage Wall Assemblies; 2009, with Editorial Revision (2012).
- P. NFPA 259 - Standard Test Method for Potential Heat of Building Materials; 2018.
- Q. NFPA 268 - Standard Test Method for Determining Ignitibility of Exterior Wall Assemblies Using a Radiant Heat Energy Source; 2017.
- R. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components; 2019.

1.4 SUBMITTALS

- A. See Section 01 3000 - 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.
- 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 square, illustrating project colors and textures.
- F. Manufacturer's Installation Instructions: Indicate preparation required, installation techniques, and jointing requirements.

1.5 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. Member in good standing of EIMA (EIFS Industry Members Association).

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- 2. Manufacturer of EIFS products for not less than 5 years.
- 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 five years of documented experience.

1.6 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.

1.7 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 until dry.
- C. Do not install coatings or sealants when ambient temperature is below 40 degrees F.
- D. Do not leave installed insulation board exposed to sunlight for extended periods of time.

1.8 WARRANTY

- A. See Section 01 7800 - 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

2.1 MANUFACTURERS

- A. Basis of Design:
 - 1. Dryvit Systems, Inc; Dryvit Outsulation EIFS, Class PB: www.dryvit.com/#sle.
- B. Other Acceptable Exterior Insulation and Finish Systems Manufacturers:
 - 1. Master Builders Solutions: www.senergy.master-builders-solutions.com/en/#sle
 - 2. Parex USA, Inc: www.parex.com/sle.

3. Sto Corp: www.stocorp.com/#sle.

2.2 EXTERIOR INSULATION AND FINISH SYSTEM

- A. Exterior Insulation and Finish System: DRAINAGE type; reinforced finish coating on flat-backed insulation board adhesive-applied directly to 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.
- C. Adhesion of Water-Resistive Coating to Substrate: For each combination of coating and substrate, minimum flatwise tensile bond strength of 15 psi, when tested in accordance with ASTM C297/C297M.
- D. Adhesion to Water-Resistive Coating: For each combination of insulation board and substrate, when tested in accordance with ASTM C297/C297M, maximum adhesive failure of 25 percent unless flatwise tensile bond strength exceeds 15 psi in all samples.
- E. 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 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.
- F. Drainage Efficiency: Average minimum efficiency of 90 percent, when tested in accordance with ASTM E2273 for 75 minutes.
- G. 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 in size.
- H. 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.
- I. 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.

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- J. 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.
- K. Mildew Resistance: No growth supported on finish coating during 28 day exposure period, when tested in accordance with ASTM D3273.
- L. Abrasion Resistance Of Finish: No cracking, checking or loss of film integrity when tested in accordance with ASTM D968 with 113.5 gallons of sand.
- M. 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, for areas not indicated as requiring higher impact resistance.
 - 2. High: 90 to 150 in-lb, for areas lower than 8 feet, unless otherwise indicated.

2.3 MATERIALS

- A. Finish Coating Top Coat: Water-based, air curing, acrylic or polymer-based finish with integral color and texture.
 - 1. Texture: As indicated on drawings.
 - 2. Color: As selected by Architect from manufacturer's standard range.
- B. Base Coat: Fiber-reinforced, acrylic or polymer-based product compatible with insulation board and reinforcing mesh, Class PB.
- C. Expanded Polystyrene (EPS) Board Insulation (**IN-02**): Complies with ASTM C578.
 - 1. Board Size Tolerance: Plus/minus 1/16 inch from square and dimension.
 - 2. Board Thickness: As indicated on drawings.
 - 3. Type and Thermal Resistance, R-value (RSI-value): Type I, 3.6 (0.63) per 1 inch thickness at 75 degrees F mean temperature using ASTM C177 test method.
- D. Water-Resistive Barrier Coating: Fluid-applied air and water barrier membrane; applied to sheathing; furnished or approved by EIFS manufacturer.

2.4 ACCESSORIES

- A. Insulation Adhesive: Type required by EIFS manufacturer for project substrate.
- B. Trim: EIFS manufacturer's standard PVC or galvanized steel trim accessories, as required for a complete project and including starter track and drainage accessories.
- C. Sealant Materials: Compatible with EIFS materials and as recommended by EIFS manufacturer.

PART 3 EXECUTION

3.1 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 when tested with a 10 ft straightedge.

3.2 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.

3.3 INSTALLATION - WATER-RESISTIVE BARRIER

- A. Apply barrier coating as recommended by coating manufacturer; prime substrate as required before application.
- B. Seal substrate transitions and intersections with other materials to form continuous water-resistive barrier on exterior of sheathing, using method recommended by manufacturer.
- C. At door and window rough openings and other wall penetrations, seal water-resistive barrier and flexible flashings to rough opening before installation of metal flashings, sills, or frames, using method recommended by manufacturer.
- D. Lap flexible flashing or flashing tape at least 2 inches on each side of joint or transition.

3.4 INSTALLATION - INSULATION

- A. Install in accordance with manufacturer's instructions.
- B. Install back wrap reinforcing mesh at all openings and terminations that are not to be protected with trim.
- C. On wall surfaces, install boards horizontally.

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- 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.
- E. Fill gaps greater than 1/16 inch with strips or shims cut from the same insulation material.
- F. Rasp irregularities off surface of installed insulation board.
- G. Adhesive Attachment: Use method required by manufacturer to achieve drainage efficiency specified; do not close up drainage channels when placing insulation board.

3.5 INSTALLATION - CLASS PB 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.
 - 2. Allow base coat to dry a minimum of 24 hours before next coating application.
- B. As required by impact resistance requirements, install second layer of reinforcing mesh embedded in second coat of base coating, tightly butting ends and edges of mesh.
- C. Apply finish coat after base coat has dried not less than 24 hours, embed finish aggregate, and finish to a uniform texture and color.
- D. Finish Coat Thickness: As recommended by manufacturer.
- E. Seal control and expansion joints within the field of exterior finish and insulation system, using procedures recommended by sealant and finish system manufacturers.

3.6 CLEANING

- A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.
- B. Clean EIFS surfaces and work areas of foreign materials resulting from EIFS operations.

3.7 PROTECTION

- A. Protect completed work from damage and soiling by subsequent work.

END OF SECTION

SECTION 07 2500 - WEATHER BARRIERS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Water-resistive barriers: Under exterior wall cladding, over sheathing or other substrate.

1.2 RELATED REQUIREMENTS

- A. Section 07 6200 - Sheet Metal Flashing and Trim: Metal flashings installed in conjunction with weather barriers.
- B. Section 07 9200 - Joint Sealants: Sealing building expansion joints.

1.3 DEFINITIONS

- A. Weather Barriers: Assemblies that form either water-resistive barriers, air barriers, or vapor retarders.
- B. Water-Resistive Barrier: A material behind an exterior wall covering that is intended to resist liquid water that has penetrated behind the exterior covering from further intruding into the exterior wall assembly.

1.4 REFERENCE STANDARDS

- A. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2019.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.
- C. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- D. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials; 2013.
- E. ICC-ES AC212 - Acceptance Criteria for Water-Resistive Coatings Used as Water-Resistive Barriers over Exterior Sheathing; 2015.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on material characteristics, performance criteria, and limitations.

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- C. ABAA Field Quality Control Submittals: Submit third-party reports of testing and inspection required by ABAA QAP.
- D. Manufacturer's Installation Instructions: Indicate preparation, installation methods, and storage and handling criteria.
- E. ABAA Manufacturer Qualification: Submit documentation of current evaluation of proposed manufacturer and materials.
- F. 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.
- G. 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.

1.6 FIELD CONDITIONS

- A. Maintain temperature and humidity recommended by materials manufacturers before, during, and after installation.

PART 2 PRODUCTS

2.1 WATER-RESISTIVE BARRIER MATERIALS (WATER VAPOR PERMEABLE AND WATER-RESISTIVE)

- A. Water-Resistive Barrier, Fluid Applied: Vapor permeable, elastomeric waterproofing.
 - 1. Water-Resistive Barrier Coating:
 - a. Air Permeance: 0.004 cfm/sq ft, maximum, when tested in accordance with ASTM E2178.
 - b. Water Vapor Permeance: 5 perms, minimum, when tested in accordance with ASTM E96/E96M Procedure B (Water Method) at 73.4 degrees F.
 - c. Ultraviolet (UV) and Weathering Resistance: Approved in writing by manufacturer for up to six months of weather exposure after application.
 - d. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.
 - e. Nail Sealability: Pass, when tested in accordance with ASTM D1970/D1970M.
 - f. Sealants, Tapes and Accessories: As recommended by coating manufacturer.
 - g. Manufacturers:

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- 1) Parex USA, Inc; Parex USA WeatherSeal Spray & Roll-on:
www.parexusa.com/#sle.
- 2) PROSOCO, Inc; R-GUARD Spray Wrap MVP:
www.prosoco.com/r-guard/#sle.
- 3) Sto Corp; Sto Gold Coat: www.stocorp.com/#sle.
- 4) Substitutions: See Section 01 6000 - Product Requirements.

2.2 ACCESSORIES

- A. Sealants, Tapes, and Accessories Used for Sealing Water-Resistive Barrier and Adjacent Substrates: As indicated or complying with water-resistive barrier manufacturer's installation instructions.
- B. Flexible Flashing: Self-adhesive sheet flashing complying with ASTM D1970/D1970M, except slip resistance requirement is waived if not installed on a roof.
 1. Composition: Butyl rubber sheet laminated to elasticized polyethylene sheet.
 2. Thickness: 30 mil, 0.030 inch, nominal; exception from ASTM D1970/D1970M.
- C. Thinners and Cleaners: As recommended by water-resistive barrier manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces and conditions comply with requirements of this section.

3.2 PREPARATION

- A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.

3.3 INSTALLATION

- A. Install materials in accordance with manufacturer's installation instructions.
- B. Water-Resistive Barriers: Install continuous water-resistive barrier over surfaces indicated, with sheets lapped to shed water but with seams not sealed.
- C. Apply sealants and adhesives within recommended temperature range in accordance with manufacturer's installation instructions.
- D. Self-Adhered Sheets:
 1. Prepare substrate in accordance with sheet manufacturer's installation instructions; fill and tape joints in substrate and between dissimilar materials.

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2. Lap sheets shingle-fashion to shed water and seal laps airtight.
3. Upon placement of sheets, firmly press onto substrate with resilient hand roller; ensure that laps are firmly adhered with no gaps or fishmouths.
4. Use same material, or other material approved by sheet manufacturer, to seal sheets to adjacent substrates, and as flashing.
5. At expansion joints, provide transition to joint assemblies approved by sheet manufacturer.

E. Coatings:

1. Prepare substrate in accordance with coating manufacturer's installation instructions; treat joints in substrate and between dissimilar materials as indicated.
2. Apply bead or trowel coat of mastic sealant with minimum thickness of 1/4 inch along coating seams, rough cuts, and as recommended by manufacturer.
3. Apply flashing to seal with adjacent construction and to bridge joints in coating substrate.

F. Openings and Penetrations in Exterior Water-Resistive Barriers:

1. Install flashing over sills, covering entire sill framing member, and extend at least 5 inches onto water-resistive barrier and at least 6 inches up jambs; mechanically fasten stretched edges.
2. At openings 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 wide; do not seal sill flange.
3. At openings filled with nonflanged frames, seal water-resistive barrier to each side of framing at opening using flashing at least 9 inches wide, and covering entire depth of framing.
4. At head of openings, install flashing under water-resistive barrier extending at least 2 inches beyond face of jambs; seal water-resistive barrier to flashing.
5. At interior face of openings, seal gaps between window and door frames and rough framing using appropriate joint sealant over backer rod.
6. Service and Other Penetrations: Form flashing around penetrating items and seal to surface of water-resistive barrier.

3.4 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for additional requirements.
- B. Do not cover installed water-resistive barriers until required inspections have been completed.
- C. Take digital photographs of each portion of installation prior to covering up weather barriers.

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3.5 PROTECTION

- A. Do not leave materials exposed to weather longer than recommended by manufacturer.

END OF SECTION

SECTION 07 4213 - METAL WALL PANELS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Manufactured metal panels for exterior wall panels, with related flashings.

1.2 RELATED REQUIREMENTS

- A. Section 07 2100 - Thermal Insulation.
- B. Section 07 2500 - Weather Barriers: Water-resistive barrier under wall panels.
- C. Section 07 9200 - Joint Sealants: Sealing joints between metal wall panel system and adjacent construction.
- D. Section 09 2116 - Gypsum Board Assemblies: Wall panel substrate.

1.3 REFERENCE STANDARDS

- A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.
- B. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document); 2015.
- C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- D. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process; 2010 (Reapproved 2015).
- E. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Storage and handling requirements and recommendations.
 - 2. Installation methods.

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3. Specimen warranty.

- C. Shop Drawings: Indicate dimensions, layout, joints, construction details, support clips, and methods of anchorage.
- D. Samples: Submit two samples of wall panel and soffit panel, 12 inches by 12 inches in size illustrating finish color, sheen, and texture.
- E. Manufacturer's qualification statement.
- F. Installer's qualification statement.
- G. 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.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years of documented experience.
- B. Installer Qualifications: Company specializing in installing products specified in this section with minimum three years of documented experience.

1.6 MOCK-UPS

- A. Construct mock-up, 4 feet long by 4 feet wide, minimum; include panel and soffit system, attachments to building frame, associated vapor retarder and air seal materials, weep drainage system, sealants and seals, and related insulation in mock-up.
- B. Locate as directed by Architect.
- C. Accepted mock-up may remain as part of work.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.
- B. Store prefinished material off the ground and protected from weather; prevent twisting, bending, or abrasion; provide ventilation; slope metal sheets to ensure proper drainage.
- C. Prevent contact with materials that may cause discoloration or staining of products.

1.8 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

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- B. Finish Warranty: Provide 5-year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking. Complete forms in Owner's name and register with warrantor.
- C. Special Warranty: Provide 5-year warranty covering water tightness and integrity of seals of metal wall panels. Complete forms in Owner's name and register with warrantor.
- D. Installation Warranty for Building Rainscreen Assembly: Installer of exterior rainscreen assembly (including air/vapor barrier and attachments, framing, and exterior panels) to provide 10-year warranty that includes coverage for defective materials and/or workmanship. This warranty will also clearly include materials, labor, necessary activity to access these areas, and removal of any materials to effect repairs and restore to watertight conditions.
www.edacontractors.com/#sle

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Concealed Clip Rainscreen Metal Wall Panel System:
 - 1. ATAS International, Inc: www.atas.com/#sle.

2.2 METAL WALL PANEL SYSTEM

- A. Wall Panel System: Provide factory-formed metal wall panels designed to be field assembled by interlocking seams and incorporating concealed fasteners.
 - 1. Provide exterior panels and subgirt framing assembly.
 - 2. Design and size components to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of wall.
 - 3. Maximum Allowable Deflection of Panel: $L/180$ for length(L) of span.
 - 4. Movement: Accommodate movement within system without damage to components or deterioration of seals, movement between system and perimeter components when subject to seasonal temperature cycling; dynamic loading and release of loads; and deflection of structural support framing.
 - 5. Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.
 - 6. Fabrication: Formed true to shape, accurate in size, square, and free from distortion or defects; pieces of longest practical lengths to provide pattern as indicated on Drawings.
 - 7. Provide continuity of water-resistive barrier seal at building enclosure elements; see Section 07 2500.
- B. Exterior Panels:
 - 1. Basis of Design: ATAS International, Inc.; Versa-Lok VSL Panels.

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2. Profile: Horizontal; style as indicated.
 3. Side Seams: Formed with vertical panel edges and intermediate stiffening ribs symmetrically spaced between panel edges, with flush joint between solid panels, unless otherwise recommended by manufacturer.
 4. Material: Precoated aluminum sheet, 20 gauge, 0.032 inch minimum thickness.
 5. Surface Finish: Smooth, flat.
 6. Exterior Finish: 70% PVDF.
 7. Panel Height: 16 inches, net coverage.
 8. Panel Width: 36 inches, net coverage.
 9. Color: Oxide Series, Copper Brown.
- C. Subgirt Framing Assembly:
1. 8 gauge, 0.125 inch thick formed non-precoated aluminum-zinc-alloy sheet.
- D. Internal and External Corners: Same material, thickness, and finish as exterior sheets; profile to suit system; shop cut and factory mitered to required angles.
- E. Trim, Closure Pieces, Caps, and Flashings: Same material, thickness and finish as exterior sheets; brake formed to required profiles.
- F. Anchors: Stainless steel.

2.3 MATERIALS

- A. Precoated Aluminum Sheet: ASTM B209/B209M, 3105 alloy, O temper, with smooth surface texture; continuous-coil-coated on exposed surfaces with specified finish coating and on panel back with specified panel back coating.
- B. Non-Precoated Aluminum Sheet: ASTM B209/B209M, 3105 alloy, O temper, with smooth surface, mill finish.

2.4 FINISHES

- A. Exposed Surface Finish: Panel manufacturer's standard polyvinylidene fluoride (PVDF) coating, top coat over manufacturer's standard primer.
- B. Fluoropolymer Coil Coating System: Polyvinylidene fluoride (PVDF) multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent PVDF resin, and at least 80 percent of coil coated metal surfaces having minimum total dry film thickness (DFT) of 0.9 mil, 0.0009 inch; color and gloss as selected by Architect from manufacturer's standard line.

2.5 ACCESSORIES

- A. Gaskets: Manufacturer's standard type suitable for use with system, permanently resilient; ultraviolet and ozone resistant.
- B. Concealed Sealants: Non-curing butyl sealant or tape sealant, see Section 07 9200
- C. Exposed Sealant: Elastomeric; silicone, polyurethane, or silyl-terminated polyether/polyurethane.
- D. Fasteners: Manufacturer's standard type to suit application; with soft neoprene washers, stainless steel in aluminum panels...
 - 1. Metal-to-Metal Fasteners: Self-drilling, self-tapping screws.
- E. Flashing and Trim: Formed from same material, finish, and gauge as wall panels. Provide flashing and trim as required to provide finished appearance. Locations include, but are not limited to, head, sill, corners, jambs, framed openings, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal wall panels.
- F. Field Touch-up Paint: As recommended by panel manufacturer.
- G. Bituminous Paint: Asphalt base.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that building framing members are ready to receive panels.
- B. Verify that water-resistive barrier, see Section 294, has been properly installed over substrate; see Section 09 2116.

3.2 PREPARATION

- A. Install metal subframing, as indicated, directly over continuous thermal insulation. Metal subframing shall attach to the structural wall elements with screw fasteners. Metal subframing shall be spaced as necessary to accommodate the required clip spacing for the metal cladding panels.

3.3 INSTALLATION

- A. Install panels on walls and soffits in accordance with manufacturer's instructions.

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- B. Protect surfaces in contact with cementitious materials and dissimilar metals with bituminous paint; allow to dry prior to wall panel installation.
- C. Fasten panels to structural supports; aligned, level, and plumb.
- D. Locate joints over supports.
- E. Lap panel ends 2 inches, minimum, unless recommended to be greater by manufacturer.
- F. Seal and place gaskets to prevent weather penetration. Maintain neat appearance.

3.4 TOLERANCES

- A. Offset From True Alignment Between Adjacent Members Abutting or In Line: 1/16 inch, maximum.
- B. Variation from Plane or Location As Indicated on Drawings: 1/4 inch, maximum.

3.5 CLEANING

- A. Remove site cuttings from finish surfaces.
- B. Remove protective material from wall panel surfaces.
- C. Clean and wash prefinished surfaces with mild soap and water; rinse with clean water.
- D. Upon completion of installation, thoroughly clean prefinished aluminum surfaces in accordance with AAMA 609 & 610.

3.6 PROTECTION

- A. Protect metal wall panels until completion of project.
- B. Touch-up, repair, or replace damaged wall panels or accessories before Date of Substantial Completion.

END OF SECTION

SECTION 07 5400 - THERMOPLASTIC MEMBRANE ROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Insulation, flat and tapered.
- B. Cover boards.
- C. Flashings.
- D. Roofing stack boots and walkway pads.

1.2 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Wood nailers, blocking and curbs.
- B. Section 07 6200 - Sheet Metal Flashing and Trim: Counterflashings and reglets.
- C. Section 07 7200 - Roof Accessories: Roof-mounted units; prefabricated curbs.
- D. Division 22 - Plumbing: Roof Drains.

1.3 REFERENCE STANDARDS

- A. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- B. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2018.
- C. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2018a.
- D. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.
- E. ASTM D4434/D4434M - Standard Specification for Poly(Vinyl Chloride) Sheet Roofing; 2015.
- F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.
- G. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- H. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces; 2011.

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- I. FM (AG) - FM Approval Guide; current edition.
- J. FM DS 1-28 - Wind Design; 2007.
- K. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components; 2019.
- L. NRCA (RM) - The NRCA Roofing Manual; 2017.
- M. NRCA (WM) - The NRCA Waterproofing Manual; 2005.
- N. UL (FRD) - Fire Resistance Directory; Current Edition.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week before starting work of this section.
 - 1. Review preparation and installation procedures and coordinating and scheduling required with related work.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data indicating membrane materials, flashing materials, insulation, surfacing, and fasteners.
- C. Shop Drawings: Submit drawings that indicate joint or termination detail conditions, conditions of interface with other materials, setting plan for tapered insulation, and mechanical fastener layout.
- D. Manufacturer's Installation Instructions: Indicate membrane seaming precautions and perimeter conditions requiring special attention.
- E. Manufacturer's Field Reports: Indicate procedures followed, ambient temperatures, humidity, wind velocity during application, and supplementary instructions given.
- F. Installer's qualification statement.
- G. Specimen Warranty: For approval.
- H. Warranty Documentation:
 - 1. Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
 - 2. Submit installer's written verification that installation complies with warranty conditions for waterproof membrane.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of this section with at least five years of documented experience.
- C. Single Source Responsibility for Roof Assemblies: Provide and install products from single source.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's original containers, dry and undamaged, with seals and labels intact, unless otherwise indicated.
- B. Store materials in weather protected environment, clear of ground and moisture.
- C. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.
- D. Protect foam insulation from direct exposure to sunlight.

1.8 FIELD CONDITIONS

- A. Do not apply roofing membrane during unsuitable weather.
- B. Do not apply roofing membrane when ambient temperature is below or above that recommended by manufacturer.
- C. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- D. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.
- E. Schedule applications so that no partially completed sections of roof are left exposed at end of workday.

1.9 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Material Warranty: Provide membrane manufacturer's warranty agreeing to replace material that shows manufacturing defects within five years after installation.

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- C. System Warranty: Provide manufacturer's system warranty agreeing to repair or replace roofing that leaks or is damaged due to wind or other natural causes.
 - 1. Warranty Term: 20 years.
 - 2. For repair and replacement include costs of both material and labor in warranty.
 - 3. Exceptions are not Permitted:
 - a. Damage due to roof traffic.
 - b. Damage due to wind speed greater than 56 miles per hour but less than 90 miles per hour.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Thermoplastic Polyvinyl Chloride (PVC) Membrane Roofing Materials:
 - 1. Carlisle SynTec Systems; Sure-Flex PVC: www.carlisle-syntec.com/#sle.
 - 2. GAF; EverGuard PVC 80 mil: www.gaf.com/#sle.
 - 3. Johns Manville; JM PVC SD Plus: www.jm.com.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Insulation:
 - 1. Insulation to be by roofing membrane manufacturer..
 - 2. Substitutions: Not permitted.

2.2 ROOFING

- A. Thermoplastic Membrane Roofing: One ply membrane, induction welded, over insulation.
- B. Roofing Assembly Requirements:
 - 1. Solar Reflectance Index (SRI): Minimum of 64 based on three-year aged value; if three-year aged data is not available, minimum of 82 initial value.
 - a. Calculate SRI in accordance with ASTM E1980.
 - b. Field applied coating may not be used to achieve specified SRI.
 - 2. Roof Covering External Fire Resistance Classification: UL (FRD) Class A.
- C. Acceptable Insulation Types - Constant Thickness Application: Any of types specified.
 - 1. Minimum 2 layers of polyisocyanurate board.
 - 2. Bottom layer of polyisocyanurate board covered with single layer of polyisocyanurate board.

- D. Acceptable Insulation Types - Tapered Application: Any of types specified.
 - 1. Tapered polyisocyanurate board covered with uniform thickness polyisocyanurate board.
 - 2. Uniform thickness polyisocyanurate board covered with tapered polyisocyanurate board.

2.3 MEMBRANE ROOFING AND ASSOCIATED MATERIALS

- A. Membrane Roofing Materials:
 - 1. PVC: Polyvinyl chloride (PVC) complying with ASTM D4434/D4434M, Type II, sheet contains reinforcing fibers or reinforcing fabrics.
 - a. Thickness: 80 mil, 0.080 inch, minimum.
 - 2. Sheet Width: Factory fabricated into widest possible sheets.
 - 3. Color: White.
- B. Seaming Materials: As recommended by membrane manufacturer.
- C. Membrane Fasteners: As recommended and approved by membrane manufacturer.
 - 1. Membrane-surfaced washers and screws as required for induction welding membrane.
- D. Flexible Flashing Material: Material recommended by membrane manufacturer.

2.4 COVER BOARDS

- A. Cover Boards: Faced, and with high compressive strength polyisocyanurate (ISO) insulation complying with ASTM C1289, and the following characteristics:
 - 1. Classifications: Type II, Class 4 - Faced with coated or uncoated glass fiber mat facers on both major surfaces of the core foam.
 - 2. Grade and Compressive Strength: Grade 2, 110 psi.
 - 3. Board Size: 48 by 96 inches.
 - 4. Board Thickness: 1/2 inch, maximum.

2.5 INSULATION

- A. Polyisocyanurate (ISO) Board Insulation: Rigid cellular foam, complying with ASTM C1289.
 - 1. Classifications:
 - a. Type II: Faced with either cellulosic facers or glass fiber mat facers on both major surfaces of the core foam.
 - 1) Class 1 - Faced with glass fiber reinforced cellulosic facers on both major surfaces of the core foam.
 - 2) Compressive Strength: Classes 1-2-3, Grade 1, 16 psi (110 kPa), minimum.

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- 3) Thermal Resistance, R-value: At 1-1/2 inches thick; Class 1, Grades 1-2-3, 8.4 (1.48), minimum, at 75 degrees F.
2. Board Size: 48 by 96 inches.
3. Board Thickness: 3.25 inches.
4. Tapered Board: Slope as indicated; minimum thickness 1/2 inch; fabricate of fewest layers possible.
5. Board Edges: Square.

2.6 ACCESSORIES

- A. Stack Boots: Prefabricated flexible boot and collar for pipe stacks through membrane; same material as membrane.
- B. Insulation Joint Tape: Glass fiber reinforced type as recommended by insulation manufacturer, compatible with roofing materials; 6 inches wide; self adhering.
- C. Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer.
 1. Length as required for thickness of insulation material and penetration of deck substrate, with metal washers.
- D. Membrane Adhesive: As recommended by membrane manufacturer.
- E. Surface Conditioner for Adhesives: Compatible with membrane and adhesives.
- F. Thinners and Cleaners: As recommended by adhesive manufacturer, compatible with membrane.
- G. Insulation Adhesive: As recommended by insulation manufacturer.
- H. Sealants: As recommended by membrane manufacturer.
- I. Walkway Pads: Suitable for maintenance traffic, contrasting color or otherwise visually distinctive from roof membrane.
 1. Composition: Roofing membrane manufacturer's standard.
 2. Size: 18 by 18 inches.
 3. Surface Color: Manufacturer's standard.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces and site conditions are ready to receive work.

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- B. Verify deck is supported and secure.
- C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.
- D. Verify deck surfaces are dry and free of snow or ice.
- E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips are in place.

3.2 INSTALLATION, GENERAL

- A. Perform work in accordance with manufacturer's instructions, NRCA (RM), and NRCA (WM) applicable requirements.
- B. Do not apply roofing membrane during cold or wet weather conditions.
- C. Do not apply roofing membrane when ambient temperature is outside the temperature range recommended by manufacturer.
- D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

3.3 INSTALLATION - INSULATION, UNDER MEMBRANE

- A. Attachment of Insulation:
 - 1. Mechanically fasten first layer of insulation to deck in accordance with roofing manufacturer's instructions and FM DS 1-28 Factory Mutual requirements.
 - 2. Embed second layer of insulation into full bed of adhesive in accordance with roofing and insulation manufacturers' instructions.
- B. Cover Boards: Mechanically fasten cover boards in accordance with roofing manufacturer's instructions and FM (AG) Factory Mutual requirements.
- C. Lay subsequent layers of insulation with joints staggered minimum 6 inches from joints of preceding layer.
- D. Place tapered insulation to the required slope pattern in accordance with manufacturer's instructions.
- E. On metal deck, place boards parallel to flutes with insulation board edges bearing on deck flutes.

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- F. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
- G. Tape joints of insulation in accordance with roofing and insulation manufacturers' instructions.
- H. At roof drains, use factory-tapered boards to slope down to roof drains over a distance of 18 inches.
- I. Do not install more insulation than can be covered with membrane in same day.

3.4 INSTALLATION - MEMBRANE

- A. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.
- B. Shingle joints on sloped substrate in direction of drainage.
- C. Spot Adhered Application: Mechanically fasten adhesion discs to substrate. Install adhesive to discs and bond membrane. Fully adhere one roll before proceeding to adjacent rolls.
- D. Overlap edges and ends and seal seams by heat welding, minimum 3 inches. Seal permanently waterproof. Apply uniform bead of sealant to joint edge.
- E. At intersections with vertical surfaces:
 - 1. Extend membrane up a minimum of 4 inches onto vertical surfaces.
 - 2. Fully adhere flexible flashing over membrane and up to reglets or term bars.
 - 3. Insert flashing into reglets and secure.
- F. Around roof penetrations, seal flanges and flashings with flexible flashing.
 - 1. All roof penetration flashings to be factory formed units. Field constructed flashings are not permitted without written approval from Architect.
- G. Coordinate installation of roof drains and sumps and related flashings.

3.5 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for additional requirements.
- B. Require site attendance of roofing and insulation material manufacturers periodically during installation of the Work.
- C. Provide daily on-site attendance of roofing and insulation manufacturer's representative during installation of this work.

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3.6 CLEANING

- A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.
- B. Remove bituminous markings from finished surfaces.
- C. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and comply with their documented instructions.
- D. Repair or replace defaced or damaged finishes caused by work of this section.

3.7 PROTECTION

- A. Protect installed roofing and flashings from construction operations.
- B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION

SECTION 07 6200 - SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Fabricated sheet metal items, including flashings and counterflashings.
- B. Sealants for joints within sheet metal fabrications.

1.2 RELATED REQUIREMENTS

- A. Section 07 7100 - Roof Specialties: Manufactured copings, flashings, and expansion joint covers.
- B. Section 07 9200 - Joint Sealants: Sealing non-lap joints between sheet metal fabrications and adjacent construction.

1.3 REFERENCE STANDARDS

- A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2017.
- C. ASTM B32 - Standard Specification for Solder Metal; 2008 (Reapproved 2014).
- D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- E. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2012).
- F. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week before starting work of this section.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.

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- B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

1.6 QUALITY ASSURANCE

- A. Perform work in accordance with SMACNA (ASMM) requirements and standard details, except as otherwise indicated.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- B. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.1 SHEET MATERIALS

- A. Pre-Finished Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24-gauge, 0.0239-inch thick base metal, shop pre-coated with PVDF coating.
 - 1. Polyvinylidene Fluoride (PVDF) Coating: Superior performing organic powder coating, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system.
 - 2. Color: As selected by Architect from manufacturer's full colors.

2.2 FABRICATION

- A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- B. Form pieces in longest possible lengths.
- C. Hem exposed edges on underside 1/2 inch; miter and seam corners.
- D. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
- E. Fabricate corners from one piece with minimum 18-inch long legs; seam for rigidity, seal with sealant.
- F. Fabricate flashings to allow toe to extend 2 inches over roofing gravel. Return and brake edges.

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2.3 ACCESSORIES

- A. Fasteners: Galvanized steel, with soft neoprene washers.
- B. Primer: Zinc chromate type.
- C. Concealed Sealants: Non-curing butyl sealant.
- D. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.
- E. Asphalt Roof Cement: ASTM D4586/D4586M, Type I, asbestos-free.
- F. Reglets: Surface-mounted type, galvanized steel; face and ends covered with plastic tape.
- G. Solder: ASTM B32; Sn50 (50/50) type.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
- B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.2 PREPARATION

- A. Install surface mounted reglets true to lines and levels, and seal top of reglets with sealant.

3.3 INSTALLATION

- A. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted.
- B. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- C. Solder metal joints for full metal surface contact, and after soldering wash metal clean with neutralizing solution and rinse with water.

END OF SECTION

SECTION 07 7100 - ROOF SPECIALTIES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Manufactured roof specialties, including copings.

1.2 RELATED REQUIREMENTS

- A. Section 07 7200 - Roof Accessories: Manufactured curbs, roof hatches, and snow guards.

1.3 REFERENCE STANDARDS

- A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.
- B. ANSI/SPRI/FM 4435/ES-1 - Test Standard for Edge Systems Used with Low Slope Roofing Systems; 2017.
- C. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- D. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.
- 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 2016).
- F. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials; 2013.
- G. NRCA (RM) - The NRCA Roofing Manual; 2017.
- H. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on shape of components, materials and finishes, anchor types and locations.
- C. Shop Drawings: Indicate configuration and dimension of components, adjacent construction, required clearances and tolerances, and other affected work.

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- D. Samples: Submit two appropriately sized samples of coping illustrating component shape, finish, and color.
- E. Manufacturer's Installation Instructions: Indicate special procedures, fasteners, supporting members, and perimeter conditions requiring special attention.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Pipe and Penetration Flashings:
 - 1. Portals Plus: www.portalsplus.com.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.
- B. Pipe Penetration Wall Seal:
 - 1. Airex Manufacturing, Inc: www.airexmfg.com/#sle.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.

2.2 COMPONENTS

- A. Copings: Factory fabricated to sizes required; corners mitered and welded; concealed fasteners.
 - 1. Configuration: Concealed continuous hold down cleat at both legs; internal splice piece at joints of same material, thickness, and finish as cap; concealed stainless steel fasteners.
 - 2. Pull-Off Resistance: Tested in accordance with SPRI ES-1 RE-3 to positive and negative design wind pressure as defined by applicable code.
 - 3. Material: Formed steel sheet, galvanized, 24 gauge, 0.024 inch thick, minimum.
 - 4. Finish: 70 percent polyvinylidene fluoride.
 - 5. Color: As selected by Architect from manufacturer's full range.
- B. Pipe Penetration Wall Seal: Seal for HVAC piping wall penetrations with wall mounted rigid plastic outlet cover and elastomeric wall seal gasket.
 - 1. Wall Outlet Size, Stucco and Masonry Applications: 7-1/2 inches wide by 10 inches high.
 - a. Elastomeric Sleeve Diameter: 1-11/16 inches.
 - 2. Outlet Cover Color: Gray.
 - 3. Wall Outlet Water Penetration: Comply with ASTM E331 performance tests.
 - 4. Wall Outlet Air Leakage: Comply with ASTM E283/E283M performance tests.
 - 5. Wall Outlet Air Permeance: Comply with ASTM E2178 performance tests.

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6. Products:
 - a. Airex Manufacturing, Inc: www.airexmfg.com/#sle.
 - b. Substitutions: See Section 01 6000 - Product Requirements.

2.3 FINISHES

- A. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system; color as selected from manufacturer's standard colors.

2.4 ACCESSORIES

- A. Sealant for Joints in Linear Components: As recommended by component manufacturer.
- B. Adhesive for Anchoring to Roof Membrane: Compatible with roof membrane and approved by roof membrane manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that deck, curbs, roof membrane, base flashing, and other items affecting work of this Section are in place and positioned correctly.

3.2 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. Anchor components securely.
- D. Coordinate installation of components of this section with installation of roofing membrane and base flashings.

END OF SECTION

SECTION 07 7200 - ROOF ACCESSORIES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Roof curbs.
- B. Equipment rails.
- C. Roof penetrations mounting curbs.
- D. Non-penetrating pedestals.

1.2 RELATED REQUIREMENTS

- A. Section 05 5000 - Metal Fabrications: Ladder to access roof hatch.
- B. Division 07 - Roofing System.
- C. Section 07 7100 - Roof Specialties: Other manufactured roof specialty items.
- D. Division 22 - Plumbing: Items required to penetrate roofing through roof vaults.
- E. Division 23 - Mechanical: Items required to penetrate roofing through roof vaults.
- F. Division 26 - Electrical: Items required to penetrate roofing through roof vaults.

1.3 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- C. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- D. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.
- E. FEMA P-749 – Earthquake-Resistant Design Concepts: An Introduction to the NEHRP Recommended Seismic Provisions for New Buildings and Other Structures.
- F. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2009.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used.
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
 - 4. Maintenance requirements.
- C. Shop Drawings: Submit detailed layout developed for this project and provide dimensioned location and number for each type of roof accessory.
- D. Warranty Documentation:
 - 1. Submit manufacturer warranty.
 - 2. Ensure that forms have been completed in Owner's name and registered with manufacturer.

1.5 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.

1.6 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Extended Correction Period: Correct defective work within 5-year period commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.1 ROOF CURBS

- A. Roof Curbs Mounting Assemblies: Factory fabricated hollow sheet metal construction, internally reinforced, and capable of supporting superimposed live and dead loads and designated equipment load with fully mitered and sealed corner joints welded or mechanically fastened, and integral counterflashing with top and edges formed to shed water.
 - 1. Roof Curb Mounting Substrate: Curb substrate consists of corrugated metal roof deck with insulation.

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2. Sheet Metal Material:
 - a. Aluminum: 0.080 inch minimum thickness, with 3003 alloy, and H14 temper.
 3. Fabricate curb bottom and mounting flanges for installation directly on metal roof panel system to match slope and configuration of system.
 - a. Extend side flange to next adjacent roof panel seam and comply with seam configurations and seal connection, providing at least 6 inch clearance between curb and metal roof panel flange allowing water to properly flow past curb.
 - b. Where side of curb aligns with metal roof panel flange, attach fasteners on upper slope of flange to curb connection allowing water to flow past below fasteners, and seal connection.
 - c. Maintain at least 12 inch clearance from curb, and lap upper curb flange on underside of down sloping metal roof panel, and seal connection.
 - d. Lap lower curb flange overtop of down sloping metal roof panel and seal connection.
 4. Provide layouts and configurations indicated on drawings.
- B. Curbs Adjacent to Roof Openings: Provide curb on each side of opening, with top of curb horizontal for equipment mounting.
1. Provide preservative treated wood nailers along top of curb.
 2. Insulate inside curbs with 1-1/2 inch thick fiberglass insulation.
- C. Equipment Rail Curbs: Straight curbs on each side of equipment, with top of curbs horizontal and level with each other for equipment mounting.
1. Provide preservative treated wood nailers along top of rails.
 2. Height Above Finished Roof Surface: 8 inches, minimum.
- D. Pipe, Duct, or Conduit Mounting Curbs: Vertical posts, minimum 8 inches square unless otherwise indicated.
1. Height Above Finished Roof Surface: 8 inches, minimum.

2.2 ROOF HATCHES AND VENTS

- A. Roof Hatch Manufacturers:
1. Babcock-Davis: www.babcockdavis.com/sle.
 2. Bilco Company: www.bilco.com/#sle.
 3. Dur-Red Products: www.dur-red.com.
 4. Substitutions: See Section 01 6000 - Product Requirements.
- B. Roof Hatches and Smoke Vents: Factory-assembled aluminum frame and cover, complete with operating and release hardware.
1. Style: Provide flat metal covers unless otherwise indicated.

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2. Mounting Substrate: Provide frames and curbs suitable for mounting on corrugated metal roof deck with insulation.
 3. Thermally Broken Hatches: Provide insulation within frame and cover; available in each manufacturer's standard, single leaf sizes; special sizes available upon request.
 4. For Ladder Access: Single leaf; 36 by 36 inches.
- C. Frames and Curbs: One-piece curb and frame with integral cap flashing to receive roof flashings; extended bottom flange to suit mounting.
1. Material: Mill finished aluminum, 11 gauge, 0.0907 inch thick.
 2. Insulation: Manufacturer's standard; 1 inch rigid glass fiber, located on outside face of curb.
 3. Curb Height: 12 inches from surface of roof deck, minimum.
- D. Metal Covers: Flush, insulated, hollow metal construction.
1. Capable of supporting 40 psf live load.
 2. Material: Mill finished aluminum; outer cover 11 gauge, 0.0907 inch thick, liner 0.04 inch thick.
 3. Insulation: Manufacturer's standard 1 inch rigid glass fiber.
 4. Gasket: Neoprene, continuous around cover perimeter.
- E. Hardware: Steel, zinc coated and chromate sealed, unless otherwise indicated or required by manufacturer.
1. Lifting Mechanisms: Compression or torsion spring operator with shock absorbers that automatically opens upon release of latch; capable of lifting covers despite 10 psf load.
 2. Hinges: Heavy duty pintle type.
 3. Hold open arm with vinyl-coated handle for manual release.
 4. Latch: Upon closing, engage latch automatically and reset manual release.
 5. Manual Release: Pull handle on interior.
 6. Locking: SKeyed cylinder lock exterior and turn knob interior.

2.3 NON-PENETRATING ROOFTOP SUPPORTS/ASSEMBLIES

- A. Non-Penetrating Rooftop Support/Assemblies: Manufacturer-engineered and factory-fabricated, with pedestal bases that rest on top of roofing membrane, and not requiring any attachment to roof structure and not penetrating roofing assembly.
1. Design Loadings and Configurations: As required by applicable codes.
 2. Height: Provide minimum clearance of 6 inches under supported items to top of roofing.
 3. Support Spacing and Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.

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4. Steel Components: Stainless steel, or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A123/A123M.
 5. Hardware, Bolts, Nuts, and Washers: Stainless steel, or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A153/A153M.
 6. Products:
 - a. PHP Systems/Design; _____: www.phpsd.com/#sle.
 - b. Big Foot Systems Ltd.; Lock n Load Low: www.bigfootsupport.com/#sle.
 - c. Substitutions: See Section 01 6000 - Product Requirements.
- B. Pipe Supports: Provide attachment fixtures complying with MSS SP-58 and as indicated.
1. Attachment/Support Fixtures: As recommended by manufacturer, same type as indicated for equivalent indoor hangers and supports; corrosion resistant material.
 2. See relevant piping system specification section for additional requirements.
- C. Non-Penetrating Pedestals: Steel pedestals with square, round, or rectangular bases.
1. Bases: High density polypropylene or recycled rubber.
 2. Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.
 3. Steel Components: Stainless steel, or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A123/A123M.
 4. Products:
 - a. Portals Plus; Pedestal Plus: www.portalsplus.com/#sle.
 - b. Eaton, B-Line; Dura-Block: www.eaton.com/#sle.
 - c. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using methods recommended by manufacturer for achieving acceptable results for applicable substrate under project conditions.

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3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions, in manner that maintains roofing system weather-tight integrity.

3.4 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 07 9200 - JOINT SEALANTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Nonsag gunnable joint sealants.
- B. Self-leveling pourable joint sealants.
- C. Joint backings and accessories.

1.2 RELATED REQUIREMENTS

- A. Section 08 7100 - Door Hardware: Setting exterior door thresholds in sealant.
- B. Section 09 2116 - Gypsum Board Assemblies: Sealing acoustical and sound-rated walls and ceilings.
- C. Section 09 3000 - Tiling: Sealant between tile and plumbing fixtures and at junctions with other materials and changes in plane.
- D. Section 23 3100 - HVAC Ducts and Casings: Duct sealants.

1.3 REFERENCE STANDARDS

- A. ASTM C834 - Standard Specification for Latex Sealants; 2014.
- B. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2012.
- C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- D. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2013.
- E. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2008 (Reapproved 2012).
- F. ASTM C1311 - Standard Specification for Solvent Release Sealants; 2014.
- G. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2002 (Reapproved 2013).
- H. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints; 2013.
- I. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015e1.

1.4 SUBMITTALS

- A. See Section 01 3000 - 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. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
 - 6. Sample product warranty.
- 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.
- E. Custom color to match metal wall panels.

1.5 QUALITY ASSURANCE

- A. Field Adhesion Test Procedures:
 - 1. Allow sealants to fully cure as recommended by manufacturer before testing.
 - 2. Have a copy of the test method document available during tests.
 - 3. Record the type of failure that occurred, other information required by test method, and the information required on the Field Quality Control Log.
 - 4. If any combination of sealant type and substrate does not show evidence of minimum adhesion or shows cohesion failure before minimum adhesion, report results to Architect.
- B. Field Adhesion Tests of Joints: Test for adhesion using most appropriate method in accordance with ASTM C1521, or other applicable method as recommended by manufacturer.

1.6 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

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- 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

2.1 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.
 - 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 polyurethane sealant, unless otherwise indicated.
 - 1. Lap Joints between Manufactured Metal Panels: Butyl rubber, non-curing.
 - 2. Control and Expansion Joints in Concrete Paving: Self-leveling polyurethane "traffic-grade" sealant.
- C. Interior Joints: Use non-sag polyurethane sealant, unless otherwise indicated.

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1. Wall and Ceiling Joints in Non-Wet Areas: Acrylic emulsion latex sealant.
 2. Wall and Ceiling Joints in Wet Areas: Non-sag polyurethane sealant for continuous liquid immersion.
 3. Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; white.
 4. In Sound-Rated Assemblies: Acrylic emulsion latex sealant.
 5. Narrow Control Joints in Interior Concrete Slabs: Self-leveling epoxy sealant.
 6. Other Floor Joints: Self-leveling polyurethane "traffic-grade" sealant.
- D. Interior Wet Areas: restrooms and breakrooms and Commons areas; fixtures in wet areas include plumbing fixtures, countertops, cabinets, and other similar items.
- E. Sound-Rated Assemblies: Walls and ceilings identified as "STC-rated", "sound-rated", or "acoustical". See Section 09 2116 - Gypsum Board Assemblies.

2.2 JOINT SEALANTS - GENERAL

- A. Colors: As selected by the Architect.

2.3 NONSAG JOINT SEALANTS

- A. 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 25 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. Color: Match adjacent finished surfaces.
- B. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
1. Color: White.
- C. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 35 percent, minimum.
 2. Color: Match adjacent finished surfaces.
- D. Polyurethane Sealant for Continuous Water Immersion: ASTM C920, Grade NS, Uses M and A; single or multi-component; explicitly approved by manufacturer for continuous water immersion; suitable for traffic exposure when recessed below traffic surface.

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1. Movement Capability: Plus and minus 35 percent, minimum.
 2. Color: Match adjacent finished surfaces.
- E. Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.
1. Color: To be selected by Architect from manufacturer's standard range.
 2. Grade: ASTM C834; Grade 0 Degrees F (Minus 18 Degrees C).
- F. Non-Curing Butyl Sealant: Solvent-based, single component, non-sag, non-skinning, non-hardening, non-bleeding; non-vapor-permeable; intended for fully concealed applications.

2.4 SELF-LEVELING SEALANTS

- A. Self-Leveling Polyurethane Sealant: ASTM C920, Grade P, Uses M and A; single or 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. Color: To be selected by Architect from manufacturer's standard range.
 3. Service Temperature Range: Minus 40 to 180 degrees F.
- B. Self-Leveling Polyurethane Sealant for Continuous Water Immersion: Polyurethane; ASTM C920, Grade P, Uses M and A; single component; explicitly approved by manufacturer for traffic exposure and continuous water immersion.
1. Movement Capability: Plus and minus 25 percent, minimum.
 2. Color: To be selected by Architect from manufacturer's standard range.
 3. Service Temperature Range: Minus 40 to 180 degrees F.
- C. Semi-Rigid Self-Leveling Epoxy Joint Filler: Epoxy or epoxy/polyurethane copolymer; intended for filling cracks and control joints not subject to significant movement; rigid enough to support concrete edges under traffic.
1. Composition: Multi-component, 100 percent solids by weight.
 2. Durometer Hardness: Minimum of 85 for Type A or 35 for Type D, after seven days when tested in accordance with ASTM D2240.
 3. Joint Width, Minimum: 1/8 inch.

2.5 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.

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1. Type for Joints Not Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type O - Open Cell Polyurethane.
 2. Type for Joints Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type B - Bi-Cellular Polyethylene.
 3. Open Cell: 40 to 50 percent larger in diameter than joint width.
 4. 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.

PART 3 EXECUTION

3.1 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.

3.2 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.
- E. Concrete Floor Joints That Will Be Exposed in Completed Work: Test joint filler in inconspicuous area to verify that it does not stain or discolor slab.

3.3 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.

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- 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.

3.4 FIELD QUALITY CONTROL

- A. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.
- B. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

END OF SECTION

SECTION 08 1113 - HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Non-fire-rated hollow metal doors and frames.
- B. Hollow metal frames for wood doors.
- C. Thermally insulated hollow metal doors with frames.
- D. Hollow metal borrowed lites glazing frames.

1.2 RELATED REQUIREMENTS

- A. Section 07 2119 - Foamed-In-Place Insulation: Window and Door Filler Foam in frames and around openings.
- B. Section 08 7100 - Finish Hardware.
- C. Section 08 8000 - Glazing: Glass for doors and borrowed lites.

1.3 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ANSI/SDI A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finish Coatings for Steel Doors and Frames; 2007 (R2011).
- C. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2011.
- D. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2014.
- E. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2011.
- F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2017.
- G. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2018.

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- H. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.
- I. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2015a.
- J. ASTM C476 - Standard Specification for Grout for Masonry; 2018.
- K. BHMA A156.115 - American National Standard for Hardware Preparation in Steel Doors and Steel Frames; 2014.
- L. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- M. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames; 2002.
- N. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames; 2011.
- O. NAAMM HMMA 840 - Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames; 2007.
- P. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2006.
- Q. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2013.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Manufacturer's Qualification Statement.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Provide hollow metal doors and frames from SDI Certified manufacturer: <https://steeldoor.org/sdi-certified/#sle>.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
- B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Hollow Metal Doors and Frames:

1. Ceco Door, an Assa Abloy Group company: www.assaabloydss.com.
2. De La Fontaine Inc: www.delafontaine.com.
3. Republic Doors, an Allegion brand: www.republicdoor.com/#sle.
4. Southwestern Hollow Metal, Raton, NM 87740: Phone: (575) 445-5582.
5. Steelcraft, an Allegion brand: www.allegion.com/sle.

2.2 PERFORMANCE REQUIREMENTS

A. Requirements for Hollow Metal Doors and Frames:

1. Steel Sheet: Comply with one or more of the following requirements; galvanized steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
2. Accessibility: Comply with ICC A117.1 and ADA Standards.
3. Exterior Door Top Closures: Flush end closure channel, with top and door faces aligned.
4. Door Edge Profile: Manufacturers standard for application indicated.
5. Typical Door Face Sheets: Flush.
6. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.3 HOLLOW METAL DOORS

A. Exterior Doors: Thermally insulated.

1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
 - a. Level 2 - Heavy-duty.

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- b. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
 - c. Model 1 - Full Flush.
 - d. Door Face Metal Thickness: 18 gauge, 0.042 inch, minimum.
 - 2. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
 - 3. Door Thickness: 1-3/4 inches, nominal.
 - 4. Weatherstripping: Refer to Section 08 7100.
- B. Interior Doors, Non-Fire-Rated:
- 1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
 - a. Level 2 - Heavy-duty.
 - b. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
 - c. Model 1 - Full Flush.
 - d. Door Face Metal Thickness: 18 gauge, 0.042 inch, minimum.
 - 2. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
 - 3. Door Thickness: 1-3/4 inches, nominal.

2.4 HOLLOW METAL FRAMES

- A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.
- B. Exterior Door Frames: Full profile/continuously welded type.
 - 1. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.
 - 2. Frame Finish: Factory primed and field finished.
 - 3. Weatherstripping: Separate, see Section 08 7100.
- C. Interior Door Frames, Non-Fire Rated: Full profile/continuously welded type.
 - 1. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.
 - 2. Frame Finish: Factory primed and field finished.
- D. Frames for Wood Doors: Comply with frame requirements in accordance with corresponding door.
- E. Borrowed Lites Glazing Frames: Construction and face dimensions to match door frames, and as indicated on drawings.

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- F. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.
- G. Frames Wider than 48 inches: Reinforce with steel channel fitted tightly into frame head, flush with top.

2.5 FINISHES

- A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.
- B. Factory Finish: Complying with ANSI/SDI A250.3, manufacturer's standard coating.
 - 1. Color: As indicated on drawings.
- C. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15 mil, 0.015 inch dry film thickness (DFT) per coat; provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.6 ACCESSORIES

- A. Glazing: As specified in Section 08 8000.
- B. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws.
- C. Astragals for Double Doors: Specified in Section 08 7100.
- D. Grout for Frames: Mortar grout complying with ASTM C476 with maximum slump of 4 inches as measured in accordance with ASTM C143/C143M for hand troweling in place; plaster grout and thinner pumpable grout are prohibited.
- E. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Verify that finished walls are in plane to ensure proper door alignment.

3.2 PREPARATION

- A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

3.3 INSTALLATION

- A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.
- B. Coordinate frame anchor placement with wall construction.
- C. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.
- D. Install grout fill in all exterior frames, unless otherwise indicated.
 - 1. Install grout fill in interior frames, where indicated.
- E. At frames in Wood / Metal Stud Partitions: Fill space between stud framing and frames with Expanding Foam (Closed Cell) Insulation.
 - 1. Install foam insulation fill in all exterior frames, unless otherwise indicated.
 - 2. Install foam insulation fill in interior frames, where indicated.
- F. At frames in Concrete Walls / Partitions: Fill space between concrete and frames with Mineral Fiber Insulation.
 - 1. Install mineral fiber insulation fill in all exterior frames, unless otherwise indicated.
 - 2. Install mineral fiber insulation fill in interior frames, where indicated.
- G. Install door hardware as specified in Section 08 7100.
- H. Coordinate installation of electrical connections to electrical hardware items.
- I. Touch up damaged factory finishes.

3.4 TOLERANCES

- A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.
- B. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

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3.5 ADJUSTING

- A. Adjust for smooth and balanced door movement.
- B. Test sound control doors for force to close, latch, and unlatch; adjust as necessary in compliance with requirements.

END OF SECTION

SECTION 08 1416 - FLUSH WOOD DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Flush wood doors; flush configuration; fire-rated and non-rated.

1.2 RELATED REQUIREMENTS

- A. Section 08 1113 - Hollow Metal Doors and Frames.
- B. Section 08 7100 - Door Hardware.

1.3 REFERENCE STANDARDS

- A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014, with Errata (2018).

1.4 SUBMITTALS

- A. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.
- B. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.
 - 1. Provide information as required by AWI/AWMAC/WI (AWS).
- C. Samples: Submit two samples of door veneer, 12 by 12 inches in size illustrating wood grain, stain color, and sheen.
- D. Certificate: Submit labels and certificates required by quality assurance and quality control programs.
- E. Manufacturer's qualification statement.
- F. Installer's qualification statement.
- G. Warranty, executed in Owner's name.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section, with not less than five years of documented experience.

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1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.
- B. Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than five years of documented experience.
- C. Woodwork Quality Assurance Program:
 1. Provide labels indicating that the installed work complies with AWI/AWMAC/WI (AWS) requirements for grade or grades specified.
 2. Provide designated labels on shop drawings as required by quality assurance program.
 3. Provide designated labels on installed products as required by quality assurance program.
 4. Submit documentation upon completion of installation that verifies this work is in compliance with specified requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Package, deliver and store doors in accordance with specified quality standard.
- B. Accept doors on site in manufacturer's packaging, and inspect for damage.
- C. Protect doors with resilient packaging sealed with heat shrunk plastic; do not store in damp or wet areas or areas where sunlight might bleach veneer; seal top and bottom edges with tinted sealer if stored more than one week, and break seal on site to permit ventilation.

1.7 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Interior Doors: Provide manufacturer's warranty for the life of the installation.
- C. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Wood Veneer Faced Doors:
 1. Masonite Architectural: www.architectural.masonite.com/#sle.
 2. VT Industries, Inc: www.vtindustries.com/#sle.

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2.2 DOORS

- A. Doors: See drawings for locations and additional requirements.
 - 1. Quality Standard: Custom Grade, Heavy Duty performance, in accordance with AWI/AWMAC/WI (AWS), unless noted otherwise.
 - 2. Wood Veneer Faced Doors: 5-ply unless otherwise indicated.
- B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
 - 1. Provide solid core doors at each location.

2.3 DOOR AND PANEL CORES

- A. Non-Rated Solid Core: Type particleboard core (PC), plies and faces as indicated.

2.4 DOOR FACINGS

- A. Veneer Facing for Transparent Finish: Maple, veneer grade in accordance with quality standard indicated, plain sliced (flat cut), with book match between leaves of veneer, running match of spliced veneer leaves assembled on door or panel face.

2.5 DOOR CONSTRUCTION

- A. Fabricate doors in accordance with door quality standard specified.
- B. Cores Constructed with stiles and rails:
 - 1. Provide solid blocks at lock edge for hardware reinforcement.
- C. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
- D. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.
- E. Provide edge clearances in accordance with the quality standard specified.

2.6 FINISHES - WOOD VENEER DOORS

- A. Finish work in accordance with AWI/AWMAC/WI (AWS), Section 5 - Finishing for grade specified and as follows:
 - 1. Transparent:
 - a. System - 5, Varnish, Conversion.

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- b. Stain: As selected by Architect.
- c. Sheen: Flat.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.2 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions and specified quality standard.
- B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.
- C. Use machine tools to cut or drill for hardware.
- D. Coordinate installation of doors with installation of frames and hardware.

3.3 TOLERANCES

- A. Comply with specified quality standard for fit and clearance tolerances.
- B. Comply with specified quality standard for telegraphing, warp, and squareness.

3.4 ADJUSTING

- A. Adjust doors for smooth and balanced door movement.
- B. Adjust closers for full closure.

3.5 SCHEDULE - SEE DRAWINGS

END OF SECTION

SECTION 08 4313 - ALUMINUM-FRAMED STOREFRONTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Aluminum-framed storefront, with vision glass.
- B. Aluminum doors and frames.
- C. Weatherstripping.

1.2 RELATED REQUIREMENTS

- A. Section 07 2119 - Foamed-In-Place Insulation: Window and Door Filler Foam.
- B. Section 07 2500 - Weather Barriers: Sealing framing to water-resistive barrier installed on adjacent construction.
- C. Section 07 9200 - Joint Sealants: Sealing joints between frames and adjacent construction.
- D. Section 08 7100 - Door Hardware: Hardware items other than specified in this section.
- E. Section 08 8000 - Glazing: Glass and glazing accessories.

1.3 REFERENCE STANDARDS

- A. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; 2015.
- B. AAMA 501.2 - Field Check of Metal Storefronts, Curtain Walls, and Sloped Glazing Systems for Water Leakage; 2009.
- C. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document); 2015.
- D. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.
- E. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- F. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- G. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.

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- H. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.
- I. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014.
- J. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2016).

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with installation of other components that comprise the exterior enclosure.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, door hardware, and internal drainage details.
- C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.
- D. Design Data: Provide framing member structural and physical characteristics, engineering calculations, and dimensional limitations.
- E. Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.
- F. Field Quality Control Submittals: Report of field testing for water penetration.
- G. Installer's Qualification Statement.
- H. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.

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1. Provide company, field supervisors, and installers that hold active ANSI accredited certifications in appropriate categories for work specified.
 - a. North American Contractor Certification (NACC) for glazing contractors.
 - b. Equivalent independent third-party ANSI accredited certification.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Handle products of this section in accordance with AAMA CW-10.
- B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.8 FIELD CONDITIONS

- A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

1.9 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide five year warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.
- D. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS

2.1 BASIS OF DESIGN -- FRAMING FOR INSULATING GLAZING

- A. Front-Set Style, Structural Sealant Glazed Verticals, Thermally-Broken:
 1. Basis of Design: Tubelite, Inc.; T14000 I/O Series: www.tubeliteinc.com/#sle.
- B. Front-Set Style, Thermally-Broken:
 1. Basis of Design: Tubelite, Inc.; T14000 I/O Series: www.tubeliteinc.com/#sle.
 2. Vertical Mullion Dimensions: 2 inches wide by 4-1/2 inches deep.
- C. Substitutions: See Section 01 6000 - Product Requirements.

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1. For any product not identified as "Basis of Design", submit information as specified for substitutions.

2.2 BASIS OF DESIGN -- FRAMING FOR MONOLITHIC GLAZING

- A. Center-Set Style:
 1. Tubelite Inc.: www.tubeliteinc.com.
 - a. Interior: 4500 Series (Non-Thermal) Storefront Framing.
 2. Vertical Mullion Dimensions: 1-3/4 inches wide by 4 inches deep.
- B. Substitutions: See Section 01 6000 - Product Requirements.
 1. For any product not identified as "Basis of Design", submit information as specified for substitutions.

2.3 BASIS OF DESIGN -- SWINGING DOORS

- A. Wide Stile, Monolithic Glazing, Non-Thermally-Broken:
 1. Tubelite Inc.: www.tubeliteinc.com.
 - a. Interior: Standard (Non-Thermal) Entrances.
 2. Thickness: 1-3/4 inches.
- B. Wide Stile, Insulating Glazing, Thermally-Broken:
 1. Tubelite Inc.: www.tubeliteinc.com.
 - a. Exterior: Thermal-Block Entrances.
 2. Thickness: 2-1/4 inches.
- C. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of another manufacturer.
- D. Substitutions: See Section 01 6000 - Product Requirements.
 1. For any product not identified as "Basis of Design", submit information as specified for substitutions.

2.4 ALUMINUM-FRAMED STOREFRONT

- A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
 1. Glazing Rabbet: For 1 inch insulating glazing.
 2. Glazing Rabbet: For 1/4 inch monolithic glazing.
 3. Finish: Class I color anodized.

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- a. Factory finish all surfaces that will be exposed in completed assemblies.
- b. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.
4. Finish Color: Sage Brown, 8P.
5. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
6. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
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. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.
9. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
10. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
11. Jamb support: Provide steel plate reinforcing on hinge side where aluminum storefront is to have wood doors installed.
 - a. Coordinate size, type, material thickness and location of reinforcing with hardware locations and weight of wood door.

B. Performance Requirements

1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
 - a. Design Wind Loads: Comply with requirements of ASCE 7.
 - b. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.
2. Water Penetration Resistance on Manufactured Assembly: No uncontrolled water on interior face, when tested in accordance with ASTM E331 at pressure differential of 8 psf.
3. Air Leakage: 0.06 cfm/sq ft maximum leakage of storefront wall area when tested in accordance with ASTM E283/E283M at 1.57 psf pressure difference.

2.5 COMPONENTS

- A. Aluminum Framing Members: Tubular aluminum sections, drainage holes and internal weep drainage system.
 - 1. Framing members for interior applications need not be thermally broken.
 - 2. Glazing Stops: Flush.
 - 3. Structurally Reinforced Members: Extruded aluminum with internal reinforcement of structural steel member. Provide at locations where Sun Shades are indicated and where structural design indicates.
- B. Miscellaneous Framing: Extruded aluminum, thermally broken to match framing members where required, integrate with framing member drainage system. Provide manufacturer's components as indicated or recommended by manufacturer.
 - 1. Finish: Same as framing.
 - 2. Subframing / Receptors: At perimeter of units, where indicated.
 - 3. Thermal Flat Fillers: At head and jambs of exterior units where no subframing is indicated.
 - 4. Sub-sills: At sills of exterior units.
- C. Glazing: See Section 08 8000.
- D. Swing Doors: Glazed aluminum.
 - 1. Thickness: As indicated.
 - 2. Top Rail: 5 inches wide.
 - 3. Vertical Stiles: 5 inches wide.
 - 4. Bottom Rail: 10 inches wide.
 - 5. Glazing Stops: Square.
 - 6. Finish: Same as storefront.

2.6 MATERIALS

- A. Extruded Aluminum: ASTM B221 (ASTM B221M).
- B. Fasteners: Stainless steel.
- C. Exposed Flashings: Aluminum sheet, 20 gauge, 0.032 inch minimum thickness; finish to match framing members.
- D. Concealed Flashings: Sheet aluminum, 26 gauge, 0.017 inch minimum thickness.
- E. Sill Flashing Sealant: Elastomeric, silicone or polyurethane, compatible with flashing material.

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- F. Sealant for Setting Thresholds: Non-curing butyl type.
- G. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.
- H. Glazing Accessories: See Section 08 8000.

2.7 FINISHES

- A. Superior Performing Organic Coatings System: Manufacturer's standard multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent polyvinylidene fluoride (PVDF) resin, and at least 80 percent of aluminum extrusion and panels surfaces having minimum total dry film thickness (DFT) of 1.2 mils, 0.0012 inch.
- B. Color: Sage Brown, 8P.
- C. Touch-Up Materials: As recommended by coating manufacturer for field application.

2.8 HARDWARE

- A. For each door, include weatherstripping, sill sweep strip, and threshold.
- B. Other Door Hardware: See Section 08 7100.
- C. Weatherstripping: Wool pile, continuous and replaceable; provide on all exterior doors.
- D. Sill Sweep Strips: Resilient seal type, retracting, of neoprene; provide on all exterior doors.
- E. Threshold: Extruded aluminum, one piece per door opening, ribbed surface; provide on all exterior doors.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify dimensions, tolerances, and method of attachment with other work.
- B. Verify that storefront wall openings and adjoining water-resistive and/or air barrier seal materials are ready to receive work of this section.

3.2 INSTALLATION

- A. Install wall system in accordance with manufacturer's instructions.

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- B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- C. Provide alignment attachments and shims to permanently fasten system to building structure.
- D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- E. Provide thermal isolation where components penetrate or disrupt building insulation.
- F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.
- G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.
- H. Install Window and Door Filler Foam insulation in shim spaces and crevices at perimeter of assembly to maintain continuity of thermal barrier.
- I. Set thresholds in bed of sealant and secure.
- J. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.3 TOLERANCES

- A. Maximum Variation from Plumb: 0.06 inch per 3 feet non-cumulative or 0.06 inch per 10 feet, whichever is less.
- B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.4 FIELD QUALITY CONTROL

- A. Provide services of storefront manufacturer's field representative to observe for proper installation of system and submit report.
- B. Water-Spray Test: Provide water spray quality test of installed storefront components in accordance with AAMA 501.2 during construction process and before installation of interior finishes.
 - 1. Perform a minimum of three tests in each designated area as directed by Architect.
 - 2. Conduct tests in each area prior to 10 percent and 50 percent completion of this work.
- C. Repair or replace storefront components that have failed designated field testing, and retest to verify performance complies with specified requirements.

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3.5 ADJUSTING

- A. Adjust operating hardware and sash for smooth operation.

3.6 CLEANING

- A. Remove protective material from pre-finished aluminum surfaces.
- B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, and take care to remove dirt from corners and to wipe surfaces clean.
- C. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.

3.7 PROTECTION

- A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION

SECTION 08 7100 – DOOR HARDWARE

GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes:
 - 1. Mechanical and electrified door hardware for:
 - a. Swinging doors.
 - b. Gates.
 - 2. 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. Exclusions: Unless specifically listed in hardware sets, hardware is not specified in this section for:
 - 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 07 Section "Joint Sealants" for sealant requirements applicable to threshold installation specified in this section.
 - 3. Division 26 sections for connections to electrical power system and for low-voltage wiring.
 - 4. Division 28 sections for coordination with other components of electronic access control system.

1.03 REFERENCES

- A. UL - Underwriters Laboratories

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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. ANSI - American National Standards Institute
1. ANSI/BHMA A156.1 - A156.29, and ANSI/BHMA A156.31 - Standards for Hardware and Specialties

1.04 SUBMITTALS

- A. General:
1. Submit in accordance with Conditions of Contract and Division 01 requirements.
 2. 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. Prior to forwarding submittal, comply with procedures for verifying existing door and frame compatibility for new hardware, as specified in PART 3, "EXAMINATION" article, herein.
- B. Action Submittals:
1. Product Data: Technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
 2. Riser and Wiring Diagrams: After final approval of hardware schedule, submit details of electrified door hardware, indicating:
 - a. Wiring Diagrams: For power, signal, and control wiring and including:
 - 1) Details of interface of electrified door hardware and building safety and security systems.
 - 2) Schematic diagram of systems that interface with electrified door hardware.
 - 3) Point-to-point wiring.
 - 4) Risers.
 3. Door Hardware Schedule: Submit schedule with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule as published by the Door and Hardware Institute. Indicate complete designations of each item required for each door or opening, include:
 - a. Door Index; include door number, heading number, and Architects hardware set number.
 - b. Quantity, type, style, function, size, and finish of each hardware item.
 - c. Name and manufacturer of each item.

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- d. Fastenings and other pertinent information.
- e. Location of each hardware set cross-referenced to indications on Drawings.
- f. Explanation of all abbreviations, symbols, and codes contained in schedule.
- g. Mounting locations for hardware.
- h. Door and frame sizes and materials.
- i. Operational Description of openings with any electrified hardware (locks, exits, electromagnetic locks, electric strikes, automatic operators, door position switches, magnetic holders or closer/holder units, and access control components). Operational description should include operational descriptions for: egress, ingress (access), and fire/smoke alarm connections.
 - 1) Submittal Sequence: Submit door hardware schedule 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 that is critical in Project construction schedule.

4. Key Schedule:

- a. After Keying Conference, provide keying schedule listing levels of keying as well as explanation 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.
 - 1) 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.

C. Informational Submittals:

- 1. Qualification Data: For Supplier, Installer and Architectural Hardware Consultant.
- 2. Product data for electrified door hardware:
 - a. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.
- 3. Certificates of Compliance:
 - a. UL listings for fire-rated hardware and installation instructions if requested by Architect or Authority Having Jurisdiction.

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- b. Electrified Hardware Coordination Conference Certification: Letter of compliance, signed by Contractor, attesting to completion of electrified hardware coordination conference, specified in “QUALITY ASSURANCE” article, herein.
 - 4. Warranty: Special warranty specified in this Section.
- D. 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. As-installed wiring diagrams for each opening connected to power, both low voltage and 110 volts.
 - j. Copy of warranties including appropriate reference numbers for manufacturers to identify project.

1.05 QUALITY ASSURANCE

- A. Supplier Qualifications and Responsibilities: 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) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.
 - 1. Warehousing Facilities: In Project's vicinity.
 - 2. Scheduling Responsibility: Preparation of door hardware and keying schedules.
 - 3. 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.
 - 4. 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.
 - a. Upon completion of electronic security hardware installation, inspect and verify that all components are working properly.
- B. Architectural Hardware Consultant Qualifications: 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:
 - 1. For door hardware, DHI-certified, Architectural Hardware Consultant (AHC) or person with 20 years' experience bidding, detailing and supplying commercial contract door hardware.

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2. Can provide installation and technical data to Architect and other related subcontractors.
 3. Can inspect and verify components are in working order upon completion of installation.
 4. Capable of producing wiring diagrams.
 5. Capable of coordinating installation of electrified hardware with Architect and electrical engineers.
- C. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.
- D. Fire-Rated Door Openings: Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction. 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.
- E. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction.
- F. Accessibility Requirements: For door hardware on doors in an accessible route, comply with governing accessibility regulations cited in "REFERENCES" article, herein.
- G. Keying Conference
1. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:
 - a. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
 - b. Preliminary key system schematic diagram.
 - c. Requirements for key control system.
 - d. Requirements for access control.
 - e. Address for delivery of keys.
- H. Coordination Conferences:
1. Installation Coordination Conference: Prior to hardware installation, schedule and hold meeting to review questions or concerns related to proper installation and adjustment of door hardware.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site.
- 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.
1. Deliver each article of hardware in manufacturer's original packaging.

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C. Project Conditions:

1. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.
2. 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.

D. Protection and Damage:

1. Promptly replace products damaged during shipping.
2. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work.
3. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.

E. Deliver keys to Owner by registered mail or overnight package service.

1.07 COORDINATION

- A. Installation Templates: Distribute for doors, frames, and other work specified to be factory or shop prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- B. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.
- C. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.

1.08 WARRANTY

- A. Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
 1. Warranty Period: Beginning from date of Substantial Completion, for durations indicated.
 - a. Closers:
 - 1) Mechanical: 30 years.
 - b. Exit Devices:
 - 1) Mechanical: 3 years.
 - 2) Electrified: 1 year.
 - c. Locksets:
 - 1) Mechanical: 10 years.
 - 2) Electrified: 1 year.
 - d. Auto Operators: 2 years.

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Warranty does not cover damage or faulty operation due to improper installation,
improper use or abuse.

1.09 MAINTENANCE

- A. Maintenance Tools: Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

PRODUCTS

2.01 MANUFACTURERS

- A. The Owner requires use of certain products for their unique characteristics and project suitability to insure continuity of existing and future performance and maintenance standards. After investigating available product offerings, the Awarding Authority has elected to prepare proprietary specifications. These products are specified with the notation: "No Substitute."
 - 1. Where "No Substitute" is noted, submittals and substitution requests for other products will not be considered.
- B. 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.
- C. 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.
- D. 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 MATERIALS

- A. Fasteners
 - 1. Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation.
 - 2. Furnish screws for installation with each hardware item. Finish exposed (exposed under any condition) screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.
 - 3. Provide concealed fasteners for hardware units exposed when door is closed except when no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless thru-bolts are required to fasten hardware securely. Review door specification and advise Architect if thru-bolts are required.
 - 4. Install hardware with fasteners provided by hardware manufacturer.

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- B. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.
 - 1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.

2.03 HINGES

A. Manufacturers and Products:

- 1. Scheduled Manufacturer and Product: Ives 5BB series.
- 2. Acceptable Manufacturers and Products: Hager BB series, Bommer BB5000 series.

B. Requirements:

- 1. Provide hinges conforming to ANSI/BHMA A156.1.
- 2. 1-3/4 inch (44 mm) thick doors, up to and including 36 inches (914 mm) wide:
 - a. Exterior: Standard weight, steel, 4-1/2 inches (114 mm) high
 - b. Interior: Standard weight, steel, 4-1/2 inches (114 mm) high
- 3. 1-3/4 inch (44 mm) thick doors over 36 inches (914 mm) wide:
 - a. Exterior: Heavy weight, steel, 5 inches (127 mm) high
 - b. Interior: Heavy weight, steel, 5 inches (127 mm) high
- 4. 2 inches or thicker doors:
 - a. Exterior: Heavy weight, steel, 5 inches (127 mm) high
 - b. Interior: Heavy weight, steel, 5 inches (127 mm) high
- 5. Provide three hinges per door leaf for doors 90 inches (2286 mm) or less in height, and one additional hinge for each 30 inches (762 mm) of additional door height.
- 6. Where new hinges are specified for existing doors or existing frames, provide new hinges of identical size to hinge preparation present in existing door or existing frame.
- 7. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
 - a. Steel Hinges: Steel pins
 - b. Non-Ferrous Hinges: Stainless steel pins
 - c. Out-Swinging Exterior Doors: Non-removable pins
 - d. Out-Swinging Interior Lockable Doors: Non-removable pins
 - e. Interior Non-lockable Doors: Non-rising pins
- 8. Width of hinges: 4-1/2 inches (114 mm) at 1-3/4 inch (44 mm) thick doors, and 5 inches (127 mm) at 2 inches (51 mm) or thicker doors. Adjust hinge width as required for door, frame, and wall conditions to allow proper degree of opening.

2.04 CONTINUOUS HINGES

A. Aluminum Geared

- 1. Manufacturers:

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- a. Scheduled Manufacturer: Ives (**IVE**)
 - b. Acceptable Manufacturers: Select, Stanley.
2. Requirements:
- a. Provide aluminum geared continuous hinges conforming to ANSI/BHMA A156.26, Grade 1.
 - b. Provide aluminum geared continuous hinges, where specified in the hardware sets, fabricated from 6063-T6 aluminum.
 - c. Provide split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation.
 - d. Provide hinges capable of supporting door weights up to 450 pounds, and successfully tested for 1,500,000 cycles.
 - e. On fire-rated doors, provide aluminum geared continuous hinges that are classified for use on rated doors by testing agency acceptable to authority having jurisdiction.
 - f. Provide aluminum geared continuous hinges with electrified option scheduled in the hardware sets. Provide with sufficient number and wire gage to accommodate electric function of specified hardware.
 - g. Install hinges with fasteners supplied by manufacturer.
 - h. Provide hinges 1 inch (25 mm) shorter in length than nominal height of door, unless otherwise noted or door details require shorter length and with symmetrical hole pattern.

2.05 ELECTRIC POWER TRANSFER

- A. Manufacturers:
- a. Scheduled Manufacturer: Von Duprin EPT-10 (**VON**).
 - b. Acceptable Manufacturers: ABH PT1000, Securitron CEPT-10.
- B. Provide power transfer with electrified options as scheduled in the hardware sets. Provide with number and gage of wires sufficient to accommodate electric function of specified hardware.
- C. Locate electric power transfer per manufacturer's template and UL requirements, unless interference with operation of door or other hardware items.

2.06 FLUSH BOLTS

- A. Manufacturers:
1. Scheduled Manufacturer: Ives (**IVE**).
 2. Acceptable Manufacturers: Burns, Rockwood.
- B. Requirements:
1. Provide automatic, constant latching, and manual flush bolts with forged bronze or stainless-steel face plates, extruded brass levers, and with wrought brass guides and strikes. Provide 12 inch (305 mm) steel or brass rods at doors up to 90 inches (2286 mm) in height. For doors over 90 inches (2286 mm) in height increase top rods by 6 inches

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(152 mm) for each additional 6 inches (152 mm) of door height. Provide dust-proof strikes at each bottom flush bolt.

2.07 MORTISE LOCKS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Schlage L9000 series (**SCH**).
2. Acceptable Manufacturers and Products: Sargent 8200 series.

B. Requirements:

1. Provide mortise locks conforming to ANSI/BHMA A156.13 Series 1000, Grade 1 Operational, Grade 1 Security, and manufactured from heavy gauge steel, containing components of steel with a zinc dichromate plating for corrosion resistance. Provide lock case that is multi-function and field reversible for handing without opening case. Cylinders: Refer to “KEYING” article, herein.
2. Indicators: Where specified, provide indicator window measuring a minimum 2 inch x 1/2 inch with 180 degree visibility. Provide messages color-coded with full text and/or symbols, as scheduled, for easy visibility.
 - a. Occupied Indicator: Provide indicator above cylinder for visibility while operating the lock that identifies the trims as do not disturb/(blank) status of the door. Indicator in blank (or unoccupied) state has a white background with black text and icon. Indicator in the do not disturb state has a red background with white text and icon.
3. Provide locks with standard 2-3/4 inches (70 mm) backset with full 3/4 inch (19 mm) throw stainless steel mechanical anti-friction latchbolt. Provide deadbolt with full 1 inch (25 mm) throw, constructed of stainless steel.
4. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
5. Provide electrified options as scheduled in the hardware sets. Where scheduled, provide a request to exit (RX) switch that is actuated with rotation of inside lever.
6. Lever Trim: Solid brass, bronze, or stainless steel, cast or forged in design specified, with wrought roses and external lever spring cages. Provide thru-bolts levers with 2-piece spindles.
 - a. Lever Design: Schlage LONA.
 - b. Tactile Warning (Knurling): Where required by authority having jurisdiction. Provide on levers on exterior (secure side) of doors serving rooms considered to be hazardous.

2.08 CYLINDRICAL LOCKS – GRADE 1

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Schlage ND series (**SCH**).
2. Acceptable Manufacturers and Products: Sargent 11-Line.

B. Requirements:

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1. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 1, 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. Provide electrified options as scheduled in the hardware sets.
8. Lever Trim: Solid cast levers without plastic inserts and wrought roses on both sides.
 - a. Lever Design: Schlage - LON
 - b. Tactile Warning (Knurling): Where required by authority having jurisdiction. Provide on levers on exterior (secure side) of doors serving rooms considered to be hazardous.

2.09 EXIT DEVICES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Von Duprin 99 series (**VON**).
2. Acceptable Manufacturers and Products: Detex Advantex series, Precision APEX 2000 series, Sargent 80 series.

B. Requirements:

1. Provide exit devices tested to ANSI/BHMA A156.3 Grade 1 and UL listed for Panic Exit or Fire Exit Hardware.
2. Cylinders: Refer to “KEYING” article, herein.
3. Provide touchpad type exit devices, fabricated of brass, bronze, stainless steel, or aluminum, plated to standard architectural finishes to match balance of door hardware.
4. Touchpad must extend a minimum of one half of door width. No plastic inserts are allowed in touchpads.
5. Provide exit devices with deadlatching feature for security and for future addition of alarm kits and/or other electrified requirements.
6. Provide flush end caps for exit devices.
7. Provide exit devices with manufacturer’s approved strikes.
8. Provide exit devices cut to door width and height. Install exit devices at height recommended by exit device manufacturer, allowable by governing building codes, and approved by Architect.
9. Mount mechanism case flush on face of doors, or provide spacers to fill gaps behind devices. Where glass trim or molding projects off face of door, provide glass bead kits.
10. Provide cylinder or hex-key dogging as specified at non fire-rated openings.
11. Removable Mullions: 2 inches (51 mm) x 3 inches (76 mm) steel tube. Where scheduled as keyed removable mullion, provide type that can be removed by use of a keyed cylinder, which is self-locking when re-installed.
12. Provide factory drilled weep holes for exit devices used in full exterior application, highly corrosive areas, and where noted in hardware sets.
13. Provide electrified options as scheduled.

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14. Top latch mounting: double or single tab mount for steel doors, face mount for aluminum doors eliminating requirement of tabs, and double tab mount for wood doors.
15. Provide exit devices with optional trim designs to match other lever and pull designs used on the project.
 - a. Tactile Warning (Knurling): Where required by authority having jurisdiction. Provide on levers on exterior (secure side) of doors serving rooms considered to be hazardous.

2.10 POWER SUPPLIES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Schlage/Von Duprin PS900 series (**SCE**).
2. Acceptable Manufacturers and Products: Precision ELR series, Sargent 3500 series, Dyalock 5000 series, Securitron BPS series, Security Door Controls 600 series.

B. Requirements:

1. Provide power supplies approved by manufacturer of supplied electrified hardware.
2. Provide appropriate quantity of power supplies necessary for proper operation of electrified locking components as recommended by manufacturer of electrified locking components with consideration for each electrified component using power supply, location of power supply, and approved wiring diagrams. Locate power supplies as directed by Architect.
3. Provide regulated and filtered 24 VDC power supply, and UL class 2 listed.
4. Provide power supplies with the following features:
 - a. 12/24 VDC Output, field selectable.
 - b. Class 2 Rated power limited output.
 - c. Universal 120-240 VAC input.
 - d. Low voltage DC, regulated and filtered.
 - e. Polarized connector for distribution boards.
 - f. Fused primary input.
 - g. AC input and DC output monitoring circuit w/LED indicators.
 - h. Cover mounted AC Input indication.
 - i. Tested and certified to meet UL294.
 - j. NEMA 1 enclosure.
 - k. Hinged cover w/lock down screws.
 - l. High voltage protective cover.

2.11 CYLINDERS

A. Manufacturers:

1. Scheduled Manufacturer: Best (**BES**).

B. Requirements:

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1. Provide SFIC cylinders/cores to match Owner's existing key system, compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset, manufacturer's series as indicated. Refer to "KEYING" article, herein.
 2. Provide the following keyway: Match Existing
- C. Construction Keying:
1. Replaceable Construction Cores.
 - a. Provide temporary construction cores replaceable by permanent cores, furnished in accordance with the following requirements.
 - 1) 3 construction control keys
 - 2) 12 construction change (day) keys.
 - b. Owner or Owner's Representative will replace temporary construction cores with permanent cores.

2.12 KEYING

- A. Provide a factory registered keying system, complying with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.
- B. Provide cylinders/cores keyed into Owner's existing factory registered keying system.
- C. Comply with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.
- D. Requirements:
 1. Provide keys with the following features:
 - a. Material: Nickel silver; minimum thickness of .107-inch (2.3mm)
 - b. Patent Protection: Keys and blanks protected by one or more utility patent(s)
 - c. Geographically Exclusive: Where High Security or Security cylinders/cores are indicated, provide nationwide, geographically exclusive key system complying with the following restrictions.
 2. 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 Architect and 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" along with the "PATENTED" or patent number to enforce the patent protection.
 - 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.

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3. Quantity: Furnish in the following quantities.
 - a. Change (Day) Keys: 3 per cylinder/core.
 - b. Permanent Control Keys: 3.
 - c. Master Keys: 6.

2.13 KEY CONTROL SYSTEM

A. Manufacturers:

1. Scheduled Manufacturer: Telkee.
2. Acceptable Manufacturers: HPC, Lund.

B. Requirements:

1. Provide key control system, including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet, all as recommended by system manufacturer, with capacity for 150% of number of locks required for Project.
 - a. Provide complete cross index system set up by hardware supplier, and place keys on markers and hooks in cabinet as determined by final key schedule.
 - b. Provide hinged-panel type cabinet for wall mounting.

2.14 DOOR CLOSERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: LCN 4010/4110/4020 series (**LCN**).
2. Acceptable Manufacturers and Products: Sargent 281 series.

B. Requirements:

1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. Certify surface mounted mechanical closers to meet fifteen million (15,000,000) full load cycles. ISO 9000 certify closers. Stamp units with date of manufacture code.
2. Provide door closers with fully hydraulic, full rack and pinion action with high strength cast iron cylinder, and full complement bearings at shaft.
3. Cylinder Body: 1-1/2 inch (38 mm) diameter with 11/16 inch (17 mm) diameter double heat-treated pinion journal.
4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck.
7. Provide closers with solid forged steel main arms and factory assembled heavy-duty forged forearms for parallel arm closers. When closers are parallel arm mounted, provide

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- closers which mount within 6-inch (152 mm) top rail without use of mounting plate so that closer is not visible through vision panel from pull side.
8. Pressure Relief Valve (PRV) Technology: Not permitted.
 9. Finish for Closer Cylinders, Arms, Adapter Plates, and Metal Covers: Powder coating finish which has been certified to exceed 100 hours salt spray testing as described in ANSI/BHMA Standard A156.4 and ASTM B117, or has special rust inhibitor (SRI).
 10. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.15 ELECTRO-MECHANICAL AUTOMATIC OPERATORS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: LCN Senior Swing (**LCN**)

B. Requirements:

1. Provide low energy automatic operator units that are electro-mechanical design complying with ANSI/BHMA A156.19.
 - a. Opening: Powered by DC motor working through reduction gears.
 - b. Closing: Spring force.
 - c. Manual, hydraulic, or chain drive closers: Not permitted.
 - d. Operation: Motor is off when door is in closing mode. Door can be manually operated with power on or off without damage to operator. Provide variable adjustments, including opening and closing speed adjustment.
 - e. Cover: Aluminum.
2. Provide units with manual off/auto/hold-open switch, push and go function to activate power operator, vestibule interface delay, electric lock delay, hold-open delay adjustable from 2 to 30 seconds, and logic terminal to interface with accessories, mats, and sensors.
3. Provide drop plates, brackets, or adapters for arms as required to suit details.
4. Provide hard-wired motion sensors and/or actuator switches for operation as specified. Provide weather-resistant actuators at exterior applications.
5. Provide key switches, with LED's, recommended and approved by manufacturer of automatic operator as required for function as described in operation description of hardware sets. Cylinders: Refer to "KEYING" article, herein.
6. Provide complete assemblies of controls, switches, power supplies, relays, and parts/material recommended and approved by manufacturer of automatic operator for each individual leaf. Actuators control both doors simultaneously at pairs. Sequence operation of exterior and vestibule doors with automatic operators to allow ingress or egress through both sets of openings as directed by Architect. Locate actuators, key switches, and other controls as directed by Architect.
7. Provide units with inputs for smoke evacuation doors, where specified, which allow doors to power open upon fire alarm activation and hold open indefinitely or until fire alarm is reset, presence detector input, which prevents closed door from opening or door that is fully opened from closing, hold open toggle input, which allows remote activation for indefinite hold open and close second time input is activated, vestibule inputs, which allow sequencing operation of two units, and SPDT relay for interfacing with latching or locking devices.

2.16 DOOR TRIM

A. Manufacturers:

1. Scheduled Manufacturer: Ives (**IVE**).
2. Acceptable Manufacturers: Burns, Trimco.

B. Requirements:

1. Provide push plates 4 inches (102 mm) wide by 16 inches (406 mm) high by 0.050 inch (1 mm) thick and beveled 4 edges. Where width of door stile prevents use of 4 inches (102 mm) wide plate, adjust width to fit.
2. Provide push bars of solid bar stock, diameter and length as scheduled. Provide push bars of sufficient length to span from center to center of each stile. Where required, mount back to back with pull.
3. Provide offset pulls of solid bar stock, diameter and length as scheduled. Where required, mount back to back with push bar.
4. Provide flush pulls as scheduled. Where required, provide back-to-back mounted model.
5. Provide pulls of solid bar stock, diameter and length as scheduled. Where required, mount back to back with push bar.
6. Provide pull plates 4 inches (102 mm) wide by 16 inches (406 mm) high by 0.050 inch (1 mm) thick, beveled 4 edges, and prepped for pull. Where width of door stile prevents use of 4 inches (102 mm) wide plate, adjust width to fit.
7. Provide wire pulls of solid bar stock, diameter and length as scheduled.
8. Provide decorative pulls as scheduled. Where required, mount back to back with pull.

2.17 PROTECTION PLATES

A. Manufacturers:

1. Scheduled Manufacturer: Ives (**IVE**).
2. Acceptable Manufacturers: Burns, Trimco.

B. Requirements:

1. Provide kick plates, mop plates, and armor plates minimum of 0.050 inch (1 mm) thick, beveled four edges as scheduled. Furnish with sheet metal or wood screws, finished to match plates.
2. Sizes of plates:
 - a. Kick Plates: 10 inches (254 mm) high by 2 inches (51 mm) less width of door on single doors, 1 inch (25 mm) less width of door on pairs
 - b. Mop Plates: 4 inches (102 mm) high by 2 inches (51 mm) less width of door on single doors, 1 inch (25 mm) less width of door on pairs
 - c. Armor Plates: 36 inches (914 mm) high by 2 inches (51 mm) less width of door on single doors, 1 inch (25 mm) less width of door on pairs

2.18 OVERHEAD STOPS AND OVERHEAD STOP/HOLDERS

A. Manufacturers:

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Santa Fe, NM

1. Scheduled Manufacturers: Glynn-Johnson (**GLY**).
2. Acceptable Manufacturers: Sargent, ABH.

B. Requirements:

1. Provide heavy duty concealed mounted overhead stop or holder as specified for exterior and interior vestibule single acting doors.
2. Provide heavy duty concealed mounted overhead stop or holder as specified for double acting doors.
3. Provide heavy or medium duty and concealed or surface mounted overhead stop or holder for interior doors as specified. Provide medium duty surface mounted overhead stop for interior doors and at any door that swings more than 140 degrees before striking wall, open against equipment, casework, sidelights, and where conditions do not allow wall stop or floor stop presents tripping hazard.
4. Where overhead holders are specified provide friction type at doors without closer and positive type at doors with closer.

2.19 DOOR STOPS AND HOLDERS

A. Manufacturers:

1. Scheduled Manufacturer: Ives (**IVE**).
2. Acceptable Manufacturers: Burns, Rockwood.

B. Provide door stops at each door leaf:

1. Provide wall stops wherever possible. Provide convex type where mortise type locks are used and concave type where cylindrical type locks are used.
2. Where a wall stop cannot be used, provide universal floor stops for low or high rise options.
3. Where wall or floor stop cannot be used, provide medium duty surface mounted overhead stop.

2.20 THRESHOLDS, SEALS, DOOR SWEEPS, AUTOMATIC DOOR BOTTOMS, AND GASKETING

A. Manufacturers:

1. Scheduled Manufacturer: Zero International (**ZER**).
2. Acceptable Manufacturers: National Guard, Reese.

B. Requirements:

1. Provide thresholds, weather-stripping (including door sweeps, seals, and astragals) and gasketing systems (including smoke, sound, and light) as specified and per architectural details. Match finish of other items.
2. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
3. Size of thresholds:

DOOR HARDWARE

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- a. Saddle Thresholds: 1/2 inch (13 mm) high by jamb width by door width
 - b. Bumper Seal Thresholds: 1/2 inch (13 mm) high by 5 inches (127 mm) wide by door width
4. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.

2.21 SILENCERS

A. Manufacturers:

1. Scheduled Manufacturer: Ives (**IVE**).
2. Acceptable Manufacturers: Burns, Rockwood.

B. Requirements:

1. Provide "push-in" type silencers for hollow metal or wood frames.
2. Provide one silencer per 30 inches (762 mm) of height on each single frame, and two for each pair frame.
3. Omit where gasketing is specified.

2.22 DOOR POSITION SWITCHES

A. Manufacturers:

1. Scheduled Manufacturer: Schlage (**SCH**).
2. Acceptable Manufacturers: GE-Interlogix, Sargent.

B. Requirements:

1. Provide recessed or surface mounted type door position switches as specified.
2. Coordinate door and frame preparations with door and frame suppliers. If switches are being used with magnetic locking device, provide minimum of 4 inches (102 mm) between switch and magnetic locking device.

2.23 LATCH PROTECTORS

A. Manufacturers:

1. Scheduled Manufacturer: Ives (**IVE**).
2. Acceptable Manufacturers: Burns, Rockwood.

B. Provide stainless steel latch protectors of type required to function with specified lock.

2.24 FINISHES

A. Finish: BHMA 626/652 (US26D); except:

1. Continuous Hinges: BHMA 628 (US28)

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2. Push Plates, Pulls, and Push Bars: BHMA 630 (US32D)
3. Protection Plates: BHMA 630 (US32D)
4. Overhead Stops and Holders: BHMA 630 (US32D)
5. Door Closers: Powder Coat to Match
6. Wall Stops: BHMA 630 (US32D)
7. Latch Protectors: BHMA 630 (US32D)
8. Weatherstripping: Clear Anodized Aluminum
9. Thresholds: Mill Finish Aluminum

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.
- B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 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. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated or one hinge for every 30

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inches (750 mm) of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

- H. Lock Cylinders: Install construction cores to secure building and areas during construction period.
 - 1. Replace construction cores with permanent cores as indicated in keying section.
- I. Wiring: Coordinate with Division 26, ELECTRICAL sections for:
 - 1. Conduit, junction boxes and wire pulls.
 - 2. Connections to and from power supplies to electrified hardware.
 - 3. Connections to fire/smoke alarm system and smoke evacuation system.
 - 4. Connection of wire to door position switches and wire runs to central room or area, as directed by Architect.
 - 5. Testing and labeling wires with Architect's opening number.
- J. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.
- K. Door Closers: Mount closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.
- L. Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings or in equipment room, or alternate location as directed by Architect.
- M. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."
- N. 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.
- O. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
- P. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
- Q. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.03 FIELD QUALITY CONTROL

- A. Engage qualified manufacturer trained representative to perform inspections and to prepare 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.

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3.04 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.
 - 1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

3.05 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary 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.

3.06 DOOR HARDWARE SCHEDULE

- A. Hardware items are referenced in the following hardware. Refer to the above-specifications for special features, options, cylinders/keying, and other requirements.
- B. Hardware Sets:

⚡ = Hardware Item Requiring Electrical Coordination

















| Abbreviation | Name |
|--------------|-----------------------------|
| BES | Best Locking Systems |
| GLY | Glynn-Johnson Corp |
| IVE | H.B. Ives |
| LCN | LCN Commercial Division |
| ROC | Rockwood Manufacturing Co. |
| SCE | Schlage Electronic Security |
| SCH | Schlage Lock Company |
| VON | Von Duprin |
| WIK | Wikk Industries, Inc. |
| ZER | Zero International Inc |

NMERB New Office Building
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HARDWARE SET: 01

DOOR NUMBER:
100A

EACH TO HAVE:












| | | | | | | |
|---|-----|------------------------|--------------------------------|---|----------|-----|
| 2 | EA | PIVOT SET | 7226 SET |  | 626 | IVE |
| 4 | EA | INTERMEDIATE PIVOT | 7226 INT |  | 626 | IVE |
| 1 | EA | PANIC HARDWARE | PDU8500-0 02 |  | 630 | ROC |
| 1 | EA | PANIC HARDWARE | PDU8500-0 06 |  | 630 | ROC |
| 1 | EA | SFIC CORE | 1CDX-7-Z-2-B |  | 626 | BES |
| 2 | EA | LONG DOOR PULL | 9264 72" 56" |  | 630 | IVE |
| 2 | EA | OH STOP | 100S |  | 630 | GLY |
| 1 | EA | SURFACE CLOSER | 4021 |  | 689 | LCN |
| 1 | EA | SURF. AUTO OPERATOR | 9542 MS AS REQ (120/240 VAC) |  | ⚡ ANCL R | LCN |
| 1 | EA | FLUSH CEILNG MTG PLATE | 4020-18G SRT |  | 689 | LCN |
| 1 | EA | ROCKER SWITCH | 8310-806R (ON/OFF/HOLD-OPEN) |  | ⚡ | LCN |
| 2 | EA | ACTUATOR, TOUCHLESS | 8310-813 |  | ⚡ BLK | LCN |
| 1 | EA | MOUNTING PLATE | 9540-18 | | ANCL R | LCN |
| 1 | EA | BOLLARD | SQ4 |  | ⚡ 630 | WIK |
| 1 | SET | SEALS | BY ALUMINUM FRAME MANUFACTURER | | | |
| 2 | EA | DOOR SWEEP | 3546AA X D.W. |  | AA | ZER |
| 1 | EA | THRESHOLD | 8655A X D.W. |  | A | ZER |
| 1 | EA | WIRING DIAGRAMS | ELEVATION 10023 |  | ⚡ | VON |

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HARDWARE SET: 02

DOOR NUMBER:
100B

EACH TO HAVE:














| | | | | | | |
|---|-----|---------------------------|-----------------------------------|---|-------------|---------------|
| 2 | EA | PIVOT SET | 7226 SET |  | 626 | IVE |
| 4 | EA | INTERMEDIATE PIVOT | 7226 INT |  | 626 | IVE |
| 2 | EA | LONG DOOR PULL | PR 9264 72" 56" N BTB MOUNT |  | 630 | IVE |
| 2 | EA | OH STOP | 100S |  | 630 | GLY |
| 1 | EA | SURFACE CLOSER | 4021 |  | 689 | LCN |
| 1 | EA | SURF. AUTO OPERATOR | 9542 MS AS REQ (120/240 VAC) |  | ✂ ANCL R | LCN |
| 1 | EA | FLUSH CEILNG MTG PLATE | 4020-18G SRT |  | 689 | LCN |
| 1 | EA | ROCKER SWITCH | 8310-806R (ON/OFF/HOLD- OPEN) |  | ✂ | LCN |
| 2 | EA | ACTUATOR, TOUCHLESS | 8310-813 |  | ✂ BLK | LCN |
| 1 | EA | MOUNTING PLATE | 9540-18 | | | ANCL LCN R |
| 1 | EA | BOLLARD | SQ4 |  | ✂ 630 | WIK |
| 1 | SET | SEALS | BY ALUMINUM FRAME MANUFACTURER | | | |
| 1 | EA | WIRING DIAGRAMS | ELEVATION 10023 |  | ✂ | VON |

NMERB New Office Building
Santa Fe, NM

HARDWARE SET: 03

DOOR NUMBER:
101A

EACH TO HAVE:

| | | | | | | |
|---|-----|---------------------------|--|---|-------|-----|
| 1 | EA | CONT. HINGE | 112XY EPT |  | 628 | IVE |
| 1 | EA | POWER TRANSFER | EPT10 |  | ✂ 689 | VON |
| 1 | EA | ELEC PANIC HARDWARE | RX-QEL-99-NL-OP-110MD 24 VDC |  | ✂ 626 | VON |
| 1 | EA | SFIC CORE | 1CDX-7-Z-2-B |  | 626 | BES |
| 1 | EA | SFIC RIM CYLINDER | 80-159 |  | 626 | SCH |
| 1 | EA | LONG DOOR PULL | 9266 36" 20" |  | 630 | IVE |
| 1 | EA | SURFACE CLOSER | 4021 |  | 689 | LCN |
| 1 | EA | FLUSH CEILNG MTG PLATE | 4020-18G SRT |  | 689 | LCN |
| 1 | EA | WALL STOP | WS406/407CVX |  | 630 | IVE |
| 1 | EA | CARD READER | MT11 OR MT15 - BY ACCESS CONTROL INTEGRATOR |  | ✂ BLK | SCE |
| 1 | EA | DOOR CONTACT | 679-05 WD OR HM AS REQ'D |  | ✂ BLK | SCE |
| 1 | EA | POWER SUPPLY | PS902 BBK 900-2RS 120/240 VAC |  | ✂ LGR | SCE |
| 1 | SET | SEALS | BY ALUM DOOR/FRAME MFG | | | |
| 1 | EA | WIRING DIAGRAMS | ELEVATION 3002 |  | ✂ | VON |

DOOR NORMALLY CLOSED AND LOCKED.

ENTRY BY VALID CREDENTIAL AT CARD READER OR BY KEY AT CYLINDER.

RX SWITCH IN PANIC SHUNTS DOOR FORCED OPEN IN ACCESS CONTROL SYSTEM.

KEY OVER-RIDE WILL CAUSE DOOR FORCED ALARM IN ACCESS CONTROL SYSTEM.

FREE EGRESS AT ALL TIMES.

DOOR HARDWARE

08 7100-24
















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HARDWARE SET: 04

DOOR NUMBER:

101B 101C 149

EACH TO HAVE:

| | | | | | | |
|---|-----|---------------------------|--|---|-------|-----|
| 1 | EA | CONT. HINGE | 112XY EPT |  | 628 | IVE |
| 1 | EA | POWER TRANSFER | EPT10 |  | ✂ 689 | VON |
| 1 | EA | ELEC PANIC HARDWARE | RX-QEL-99-NL-OP-110MD 24 VDC |  | ✂ 626 | VON |
| 1 | EA | SFIC CORE | 1CDX-7-Z-2-B |  | 626 | BES |
| 1 | EA | SFIC RIM CYLINDER | 80-159 |  | 626 | SCH |
| 1 | EA | LONG DOOR PULL | 9266 36" 20" |  | 630 | IVE |
| 1 | EA | SURFACE CLOSER | 4021 |  | 689 | LCN |
| 1 | EA | FLUSH CEILNG MTG PLATE | 4020-18G SRT |  | 689 | LCN |
| 1 | EA | WALL STOP | WS406/407CVX |  | 630 | IVE |
| 1 | EA | DOOR SWEEP | 39A X D.W. |  | A | ZER |
| 1 | EA | THRESHOLD | 8655A X D.W. |  | A | ZER |
| 1 | EA | CARD READER | MT11 OR MT15 - BY ACCESS CONTROL INTEGRATOR |  | ✂ BLK | SCE |
| 1 | EA | DOOR CONTACT | 679-05 WD OR HM AS REQ'D |  | ✂ BLK | SCE |
| 1 | EA | POWER SUPPLY | PS902 BBK 900-2RS 120/240 VAC |  | ✂ LGR | SCE |
| 1 | SET | SEALS | BY ALUM DOOR/FRAME MFG | | | |
| 1 | EA | WIRING DIAGRAMS | ELEVATION 3002 |  | ✂ | VON |

DOOR NORMALLY CLOSED AND LOCKED.

ENTRY BY VALID CREDENTIAL AT CARD READER OR BY KEY AT CYLINDER.

RX SWITCH IN PANIC SHUNTS DOOR FORCED OPEN IN ACCESS CONTROL SYSTEM.

KEY OVER-RIDE WILL CAUSE DOOR FORCED ALARM IN ACCESS CONTROL SYSTEM.

FREE EGRESS AT ALL TIMES.









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HARDWARE SET: 05

DOOR NUMBER:

102 103

EACH TO HAVE:











| | | | | | | |
|---|----|-------------------|------------------------|---|-----|-----|
| 4 | EA | HINGE | 5BB1HW 4.5 X 4.5 NRP |  | 652 | IVE |
| 1 | EA | PANIC HARDWARE | 99-L-LON |  | 626 | VON |
| 1 | EA | SFIC CORE | 1CDX-7-Z-2-B |  | 626 | BES |
| 1 | EA | SFIC RIM CYLINDER | 80-159 |  | 626 | SCH |
| 1 | EA | SURFACE CLOSER | 4111 EDA |  | 689 | LCN |
| 1 | EA | KICK PLATE | 8400 10" X 2" LDW B-CS |  | 630 | IVE |
| 1 | EA | WALL STOP | WS406/407CVX |  | 630 | IVE |
| 3 | EA | SILENCER | SR64 |  | GRY | IVE |

HARDWARE SET: 06

DOOR NUMBER:

104

EACH TO HAVE:

| | | | | | | |
|---|-----|----------------|------------------------|---|-----|-----|
| 3 | EA | HINGE | 5BB1 4.5 X 4.5 NRP |  | 652 | IVE |
| 1 | EA | STOREROOM LOCK | ND96HD LON |  | 626 | SCH |
| 1 | EA | SFIC CORE | 1CDX-7-Z-2-B |  | 626 | BES |
| 1 | EA | LOCK GUARD | LG13 |  | 630 | IVE |
| 1 | EA | SURFACE CLOSER | 4111 SCUSH |  | 689 | LCN |
| 1 | EA | KICK PLATE | 8400 10" X 2" LDW B-CS |  | 630 | IVE |
| 1 | EA | RAIN DRIP | 142A X D.W. +4" |  | AA | ZER |
| 1 | SET | SEALS | 8303AA X D.S. |  | AA | ZER |
| 1 | EA | DOOR SWEEP | 39A X D.W. |  | A | ZER |
| 1 | EA | THRESHOLD | 8655A X D.W. |  | A | ZER |

DOOR HARDWARE

08 7100-26







NMERB New Office Building
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HARDWARE SET: 07

DOOR NUMBER:

105 106

EACH TO HAVE:






| | | | | | | |
|---|----|------------------------|--|---|-----|-----|
| 4 | EA | HINGE | 5BB1 4.5 X 4.5 |  | 652 | IVE |
| 1 | EA | PRIVACY W/COIN TURN | L9044 LONA L583-363 L283- 722 OCC/VAC |  | 626 | SCH |
| 1 | EA | SURFACE CLOSER | 4011 |  | 689 | LCN |
| 1 | EA | KICK PLATE | 8400 10" X 2" LDW B-CS |  | 630 | IVE |
| 1 | EA | WALL STOP | WS406/407CVX |  | 630 | IVE |
| 3 | EA | SILENCER | SR64 |  | GRY | IVE |

HARDWARE SET: 08

DOOR NUMBER:

107 137

EACH TO HAVE:





| | | | | | | |
|---|----|----------------|--------------------|---|-----|-----|
| 4 | EA | HINGE | 5BB1 4.5 X 4.5 NRP |  | 652 | IVE |
| 1 | EA | STOREROOM LOCK | ND80HD LON |  | 626 | SCH |
| 1 | EA | SFIC CORE | 1CDX-7-Z-2-B |  | 626 | BES |
| 1 | EA | WALL STOP | WS406/407CVX |  | 630 | IVE |
| 3 | EA | SILENCER | SR64 |  | GRY | IVE |

HARDWARE SET: 09

DOOR NUMBER:

108 146 172

EACH TO HAVE:

| | | | | | | |
|---|-----|-------------|------------------------------------|---|-----|-----|
| 4 | EA | HINGE | 5BB1 4.5 X 4.5 |  | 652 | IVE |
| 1 | EA | PASSAGE SET | ND10S LON |  | 626 | SCH |
| 1 | EA | FLOOR STOP | FS410 |  | 626 | IVE |
| 1 | SET | SEALS | MOUNT CLOSE TO WALL 188S X D.S. |  | BLK | ZER |








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HARDWARE SET: 10

DOOR NUMBER:

109

EACH TO HAVE:






| | | | | | | |
|---|-----|----------------|------------------------|---|-----|-----|
| 4 | EA | HINGE | 5BB1 4.5 X 4.5 |  | 652 | IVE |
| 1 | EA | CLASSROOM LOCK | ND70HD LON |  | 626 | SCH |
| 1 | EA | SFIC CORE | 1CDX-7-Z-2-B |  | 626 | BES |
| 1 | EA | SURFACE CLOSER | 4011 |  | 689 | LCN |
| 1 | EA | KICK PLATE | 8400 10" X 2" LDW B-CS |  | 630 | IVE |
| 1 | EA | WALL STOP | WS406/407CVX |  | 630 | IVE |
| 1 | SET | SEALS | 188S X D.S. |  | BLK | ZER |

HARDWARE SET: 11

DOOR NUMBER:

| | | | | | |
|-----|-----|-----|-----|-----|-----|
| 110 | 111 | 116 | 118 | 121 | 122 |
| 136 | 139 | 140 | 141 | 142 | 150 |
| 151 | 152 | 153 | 155 | 156 | 158 |
| 159 | 160 | 162 | 163 | 164 | 165 |
| 166 | 167 | 169 | 170 | 171 | |

EACH TO HAVE:








| | | | | | | |
|---|-----|---------------|----------------|---|-----|-----|
| 4 | EA | HINGE | 5BB1 4.5 X 4.5 |  | 652 | IVE |
| 1 | EA | ENTRANCE LOCK | ND53HD LON |  | 626 | SCH |
| 1 | EA | SFIC CORE | 1CDX-7-Z-2-B |  | 626 | BES |
| 1 | EA | WALL STOP | WS406/407CCV |  | 630 | IVE |
| 1 | SET | SEALS | 188S X D.S. |  | BLK | ZER |

HARDWARE SET: 12

DOOR NUMBER:

124 126 145B

EACH TO HAVE:

| | | | | | | |
|---|----|----------------|------------------------|---|-----|-----|
| 4 | EA | HINGE | 5BB1HW 4.5 X 4.5 |  | 652 | IVE |
| 1 | EA | DOOR PULL | 8122HD 8" F |  | 626 | IVE |
| 1 | EA | PUSH PLATE | 8200 4" X 16" |  | 630 | IVE |
| 1 | EA | SURFACE CLOSER | 4011 |  | 689 | LCN |
| 1 | EA | KICK PLATE | 8400 10" X 2" LDW B-CS |  | 630 | IVE |
| 1 | EA | WALL STOP | WS406/407CVX |  | 630 | IVE |
| 3 | EA | SILENCER | SR64 |  | GRY | IVE |







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HARDWARE SET: 13

DOOR NUMBER:

125 131

EACH TO HAVE:






| | | | | | | |
|---|----|----------------|------------------------|---|-----|-----|
| 4 | EA | HINGE | 5BB1 4.5 X 4.5 NRP |  | 652 | IVE |
| 1 | EA | STOREROOM LOCK | ND80HD LON |  | 626 | SCH |
| 1 | EA | SFIC CORE | 1CDX-7-Z-2-B |  | 626 | BES |
| 1 | EA | SURFACE CLOSER | 4111 SCUSH |  | 689 | LCN |
| 1 | EA | KICK PLATE | 8400 10" X 2" LDW B-CS |  | 630 | IVE |
| 3 | EA | SILENCER | SR64 |  | GRY | IVE |

HARDWARE SET: 14

DOOR NUMBER:

128 133 134

EACH TO HAVE:







| | | | | | | |
|---|----|----------------|----------------|---|-----|-----|
| 4 | EA | HINGE | 5BB1 4.5 X 4.5 |  | 652 | IVE |
| 1 | EA | STOREROOM LOCK | ND80HD LON |  | 626 | SCH |
| 1 | EA | SFIC CORE | 1CDX-7-Z-2-B |  | 626 | BES |
| 1 | EA | WALL STOP | WS406/407CVX |  | 630 | IVE |
| 3 | EA | SILENCER | SR64 |  | GRY | IVE |

HARDWARE SET: 15

DOOR NUMBER:

130

EACH TO HAVE:

| | | | | | | |
|---|-----|------------------------|--|---|-----|-----|
| 4 | EA | HINGE | 5BB1 4.5 X 4.5 |  | 652 | IVE |
| 1 | EA | PRIVACY W/COIN TURN | L9044 LONA L583-363 L283- 722 OCC/VAC |  | 626 | SCH |
| 1 | EA | SURFACE CLOSER | 4011 |  | 689 | LCN |
| 1 | EA | KICK PLATE | 8400 10" X 2" LDW B-CS |  | 630 | IVE |
| 1 | EA | WALL STOP | WS406/407CVX |  | 630 | IVE |
| 1 | SET | SEALS | 188S X D.S. |  | BLK | ZER |












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HARDWARE SET: 16

DOOR NUMBER:

132

EACH TO HAVE:

| | | | | | | |
|---|----|-------------------|--|---|-----|-----|
| 4 | EA | HINGE | 5BB1 4.5 X 4.5 NRP |  | 652 | IVE |
| 1 | EA | POWER TRANSFER | EPT10 |  ⚡ | 689 | VON |
| 1 | EA | EU STOREROOM LOCK | ND80HDEU LON RX CON 12V/24V DC |  ⚡ | 626 | SCH |
| 1 | EA | SFIC CORE | 1CDX-7-Z-2-B |  | 626 | BES |
| 1 | EA | SURFACE CLOSER | 4111 SCUSH |  | 689 | LCN |
| 1 | EA | KICK PLATE | 8400 10" X 2" LDW B-CS |  | 630 | IVE |
| 3 | EA | SILENCER | SR64 |  | GRY | IVE |
| 1 | EA | CARD READER | MT11 OR MT15 - BY ACCESS CONTROL INTEGRATOR |  ⚡ | BLK | SCE |
| 1 | EA | DOOR CONTACT | 679-05 WD OR HM AS REQ'D |  ⚡ | BLK | SCE |
| 1 | EA | POWER SUPPLY | PS902 BBK 900-2RS 120/240 VAC |  ⚡ | LGR | SCE |
| 1 | EA | WIRING DIAGRAMS | ELEVATION 2001 |  ⚡ | | VON |

DOOR NORMALLY CLOSED AND LOCKED.

ENTRY BY VALID CREDENTIAL AT CARD READER OR BY KEY AT LOCK.

RX SWITCH IN LOCK SHUNTS DOOR FORCED OPEN IN ACCESS CONTROL SYSTEM.

KEY OVER-RIDE WILL CAUSE DOOR FORCED ALARM IN ACCESS CONTROL SYSTEM.









FREE EGRESS AT ALL TIMES.

HARDWARE SET: 17

DOOR NUMBER:

138

EACH TO HAVE:

| | | | | | | |
|---|----|-------------------|--|---|-----|-----|
| 8 | EA | HINGE | 5BB1 4.5 X 4.5 NRP |  | 652 | IVE |
| 2 | EA | MANUAL FLUSH BOLT | FB458 |  | 626 | IVE |
| 1 | EA | DUST PROOF STRIKE | DP2 |  | 626 | IVE |
| 1 | EA | STOREROOM LOCK | ND80HD LON 14-042 |  | 626 | SCH |
| 1 | EA | SFIC CORE | 1CDX-7-Z-2-B |  | 626 | BES |
| 2 | EA | OH STOP | 90S |  | 630 | GLY |
| 1 | EA | SECURITY ASTRAGAL | 43SP X 188S X D.H. - MOUNT PUSH SIDE INACTIVE LEAF |  | 600 | ZER |
| 2 | EA | SILENCER | SR64 |  | GRY | IVE |

DOOR HARDWARE

08 7100-30
















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HARDWARE SET: 18

DOOR NUMBER:

144 145A

EACH TO HAVE:

| | | | | | | |
|---|-----|---------------------------|--|---|-------|-----|
| 1 | EA | CONT. HINGE | 112XY EPT |  | 628 | IVE |
| 1 | EA | POWER TRANSFER | EPT10 |  | ✂ 689 | VON |
| 1 | EA | ELEC PANIC HARDWARE | RX-QEL-99-NL-OP-110MD 24 VDC |  | ✂ 626 | VON |
| 1 | EA | SFIC CORE | 1CDX-7-Z-2-B |  | 626 | BES |
| 1 | EA | SFIC RIM CYLINDER | 80-159 |  | 626 | SCH |
| 1 | EA | LONG DOOR PULL | 9266 36" 20" |  | 630 | IVE |
| 1 | EA | OH STOP | 100S |  | 630 | GLY |
| 1 | EA | SURFACE CLOSER | 4021 |  | 689 | LCN |
| 1 | EA | FLUSH CEILNG MTG PLATE | 4020-18G SRT |  | 689 | LCN |
| 1 | EA | DOOR SWEEP | 39A X D.W. |  | A | ZER |
| 1 | EA | THRESHOLD | 8655A X D.W. |  | A | ZER |
| 1 | EA | CARD READER | MT11 OR MT15 - BY ACCESS CONTROL INTEGRATOR |  | ✂ BLK | SCE |
| 1 | EA | DOOR CONTACT | 679-05 WD OR HM AS REQ'D |  | ✂ BLK | SCE |
| 1 | EA | POWER SUPPLY | PS902 BBK 900-2RS 120/240 VAC |  | ✂ LGR | SCE |
| 1 | SET | SEALS | BY ALUM DOOR/FRAME MFG | | | |
| 1 | EA | WIRING DIAGRAMS | ELEVATION 3002 |  | ✂ | VON |

DOOR NORMALLY CLOSED AND LOCKED.

ENTRY BY VALID CREDENTIAL AT CARD READER OR BY KEY AT CYLINDER.

RX SWITCH IN PANIC SHUNTS DOOR FORCED OPEN IN ACCESS CONTROL SYSTEM.

KEY OVER-RIDE WILL CAUSE DOOR FORCED ALARM IN ACCESS CONTROL SYSTEM.

FREE EGRESS AT ALL TIMES.
















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HARDWARE SET: 19

DOOR NUMBER:

148A

EACH TO HAVE:

| | | | | | | |
|---|-----|-----------------|---------------------------|---|-------|-----|
| 3 | EA | HINGE | 5BB1 4.5 X 4.5 NRP |  | 652 | IVE |
| 1 | EA | POWER TRANSFER | EPT10 |  | ✂ 689 | VON |
| 1 | EA | EU STOREROOM | ND96HDEU LON RX CON |  | ✂ 626 | SCH |
| | | | 12V/24V DC | | | |
| 1 | EA | SFIC CORE | 1CDX-7-Z-2-B |  | 626 | BES |
| 1 | EA | LOCK GUARD | LG13 |  | 630 | IVE |
| 1 | EA | SURFACE CLOSER | 4111 SCUSH |  | 689 | LCN |
| 1 | EA | KICK PLATE | 8400 10" X 2" LDW B-CS |  | 630 | IVE |
| 1 | EA | RAIN DRIP | 142A X D.W. +4" |  | AA | ZER |
| 1 | SET | SEALS | 8303AA X D.S. |  | AA | ZER |
| 1 | EA | DOOR SWEEP | 39A X D.W. |  | A | ZER |
| 1 | EA | THRESHOLD | 8655A X D.W. |  | A | ZER |
| 1 | EA | CARD READER | MT11 OR MT15 - BY ACCESS |  | ✂ BLK | SCE |
| | | | CONTROL INTEGRATOR | | | |
| 1 | EA | DOOR CONTACT | 679-05 WD OR HM AS REQ'D |  | ✂ BLK | SCE |
| 1 | EA | POWER SUPPLY | PS902 BBK 900-2RS 120/240 |  | ✂ LGR | SCE |
| | | | VAC | | | |
| 1 | EA | WIRING DIAGRAMS | ELEVATION 2001 |  | ✂ | VON |

DOOR NORMALLY CLOSED AND LOCKED.

ENTRY BY VALID CREDENTIAL AT CARD READER OR BY KEY AT LOCK.

RX SWITCH IN LOCK SHUNTS DOOR FORCED OPEN IN ACCESS CONTROL SYSTEM.

KEY OVER-RIDE WILL CAUSE DOOR FORCED ALARM IN ACCESS CONTROL SYSTEM.








FREE EGRESS AT ALL TIMES.

HARDWARE SET: 20

DOOR NUMBER:

148B

EACH TO HAVE:

| | | | | | | |
|---|----|----------------|------------------------|---|-----|-----|
| 4 | EA | HINGE | 5BB1 4.5 X 4.5 |  | 652 | IVE |
| 1 | EA | STOREROOM LOCK | ND80HD LON |  | 626 | SCH |
| 1 | EA | SFIC CORE | 1CDX-7-Z-2-B |  | 626 | BES |
| 1 | EA | SURFACE CLOSER | 4011 |  | 689 | LCN |
| 1 | EA | KICK PLATE | 8400 10" X 2" LDW B-CS |  | 630 | IVE |
| 1 | EA | WALL STOP | WS406/407CVX |  | 630 | IVE |
| 3 | EA | SILENCER | SR64 |  | GRY | IVE |

DOOR HARDWARE

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HARDWARE SET: 21

DOOR NUMBER:

157

EACH TO HAVE:













| | | | | | | |
|---|----|-------------|----------------|---|-----|-----|
| 4 | EA | HINGE | 5BB1 4.5 X 4.5 |  | 652 | IVE |
| 1 | EA | PASSAGE SET | ND10S LON |  | 626 | SCH |
| 1 | EA | WALL STOP | WS406/407CVX |  | 630 | IVE |
| 3 | EA | SILENCER | SR64 |  | GRY | IVE |

HARDWARE SET: 22

DOOR NUMBER:

120 135

EACH TO HAVE:

| | | | | | | |
|---|----|-------------------|--|---|-------|-----|
| 4 | EA | HINGE | 5BB1 4.5 X 4.5 NRP |  | 652 | IVE |
| 1 | EA | POWER TRANSFER | EPT10 |  | ⚡ 689 | VON |
| 1 | EA | EU STOREROOM LOCK | ND80HDEU LON RX CON 12V/24V DC |  | ⚡ 626 | SCH |
| 1 | EA | SFIC CORE | 1CDX-7-Z-2-B |  | 626 | BES |
| 1 | EA | SURFACE CLOSER | 4111 EDA |  | 689 | LCN |
| 1 | EA | KICK PLATE | 8400 10" X 2" LDW B-CS |  | 630 | IVE |
| 1 | EA | WALL STOP | WS406/407CVX |  | 630 | IVE |
| 3 | EA | SILENCER | SR64 |  | GRY | IVE |
| 1 | EA | CARD READER | MT11 OR MT15 - BY ACCESS CONTROL INTEGRATOR |  | ⚡ BLK | SCE |
| 1 | EA | DOOR CONTACT | 679-05 WD OR HM AS REQ'D |  | ⚡ BLK | SCE |
| 1 | EA | POWER SUPPLY | PS902 BBK 900-2RS 120/240 VAC |  | ⚡ LGR | SCE |
| 1 | EA | WIRING DIAGRAMS | ELEVATION 2001 |  | ⚡ | VON |

DOOR NORMALLY CLOSED AND LOCKED.

ENTRY BY VALID CREDENTIAL AT CARD READER OR BY KEY AT LOCK.

RX SWITCH IN LOCK SHUNTS DOOR FORCED OPEN IN ACCESS CONTROL SYSTEM.

KEY OVER-RIDE WILL CAUSE DOOR FORCED ALARM IN ACCESS CONTROL SYSTEM.

FREE EGRESS AT ALL TIMES.

END OF SECTION

DOOR HARDWARE

08 7100-33

SECTION 08 8000 - GLAZING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Insulating glass units.
- B. Glazing units.
- C. Glazing compounds.

1.2 RELATED REQUIREMENTS

- A. Section 07 2500 - Weather Barriers.
- B. Section 07 9200 - Joint Sealants: Sealants for other than glazing purposes.
- C. Section 08 1113 - Hollow Metal Doors and Frames: Glazed lites in doors and borrowed lites.
- D. Section 08 1416 - Flush Wood Doors: Glazed lites in doors.
- E. Section 08 4313 - Aluminum-Framed Storefronts: Glazing provided as part of storefront assembly.
- F. Section 10 2800 - Toilet, Bath, and Laundry Accessories: Mirrors.

1.3 REFERENCE STANDARDS

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; current edition.
- B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test; 2010.
- C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- D. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2011).
- E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- F. ASTM C1036 - Standard Specification for Flat Glass; 2011.
- G. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2012.

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- H. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2014.
- I. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2013.
- J. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass; 2015.
- K. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2012a.
- L. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2010.
- M. GANA (GM) - GANA Glazing Manual; 2009.
- N. GANA (SM) - GANA Sealant Manual; 2008.
- O. GANA (LGRM) - Laminated Glazing Reference Manual; 2009.
- P. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- Q. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2014.
- R. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2014.
- S. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2014.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by each of the affected installers.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data on Insulating Glass Unit and Glazing Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.
- C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.

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- D. Samples: Submit two samples 12 by 12 inch in size of glass units.
- E. Certificate: Certify that products of this section meet or exceed specified requirements.
- F. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with GANA (GM) for glazing installation methods.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years documented experience.
- C. Regulatory Requirements: Maintain NFRC labels applied by the manufacturer on glazing until inspected and approved by the authority having jurisdiction.

1.7 FIELD CONDITIONS

- A. Do not install glazing when ambient temperature is less than 40 degrees F.
- B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.8 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Insulating Glass Units: Provide a five (5) year warranty to include coverage for seal failure, coating failure, interpane dusting or misting, including providing products to replace failed units.
- C. Heat Soaked Tempered Glass: Provide a five (5) year manufacturer warranty to include coverage for spontaneous breakage of fully tempered glass caused by nickel sulfide (NiS) inclusions.

PART 2 PRODUCTS

2.1 MANUFACTURERS

2.2 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

- A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
1. Design Pressure: Calculated in accordance with ASCE 7.
 2. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
 3. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
 4. Glass thicknesses listed are minimum.
- B. Weather-Resistive Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure water-resistive barrier, vapor retarder, and/or air barrier.
1. In conjunction with weather barrier related materials described in other sections, as follows:
 - a. Water-Resistive Barriers: See Section 07 2500.
- C. Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
 2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
 3. Solar Optical Properties: Comply with NFRC 300 test method.

2.3 GLASS MATERIALS

- A. Float Glass: Provide float glass based glazing unless otherwise indicated.
1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality - Q3.
 2. Kind FT - Fully Tempered Type: Complies with ASTM C1048.
 3. Fully Tempered Safety Glass: Complies with ANSI Z97.1 or 16 CFR 1201 criteria for safety glazing used in hazardous locations.

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4. Impact Resistant Safety Glass: Complies with ANSI Z97.1 - Class B, or 16 CFR 1201 - Category I criteria.
5. Thicknesses: As indicated; provide greater thickness as required for exterior glazing wind load design.

B. Laminated Glass: Float glass laminated in accordance with ASTM C1172.

1. Laminated Safety Glass: Complies with ANSI Z97.1 - Class B or 16 CFR 1201 - Category I impact test requirements.
2. Polyvinyl Butyral (PVB) Interlayer: 0.060 inch thick, minimum.

2.4 INSULATING GLASS UNITS

A. Insulating Glass Units: Types as indicated.

1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
3. Metal-Edge Spacers: Aluminum, bent and soldered corners.
4. Spacer Color: Black.
5. Edge Seal:
 - a. Dual-Sealed System: Provide polyisobutylene sealant as primary seal applied between spacer and glass panes, and silicone, polysulfide, or polyurethane sealant as secondary seal applied around perimeter.
6. Color: Black.
7. Purge interpane space with dry air, hermetically sealed.

B. Type GL-02 - Insulating Glass Units: Vision glass, double glazed.

1. Applications: Exterior glazing unless otherwise indicated.
2. Space between lites filled with air.
3. Outboard Lite: Annealed float glass, 1/4 inch thick, minimum.
 - a. Tint: Clear.
 - b. Coating: Low-E (passive type), on #2 surface.
4. Inboard Lite: Annealed float glass, 1/4 inch thick, minimum.
 - a. Tint: Clear.
5. Total Thickness: 1 inch.
6. Thermal Transmittance (U-Value), Winter - Center of Glass: 0.29, nominal.
7. Visible Light Transmittance (VLT): 51 percent, nominal.
8. Solar Heat Gain Coefficient (SHGC): 0.23, nominal.

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9. Visible Light Reflectance, Outside: 12 percent, nominal.
 10. Glazing Method: Dry glazing method, gasket glazing.
- C. Type GL-01 - Insulating Glass Units: Safety glazing.
1. Applications:
 - a. Glazed lites in exterior doors.
 - b. Other locations required by applicable federal, state, and local codes and regulations.
 - c. Other locations indicated on drawings.
 2. Space between lites filled with air.
 3. Glass Type: Same as other vision glazing except use fully tempered float glass for both outboard and inboard lites.
 4. Tint: Clear.
 5. Total Thickness: 1 inch.
 6. Thermal Transmittance (U-Value), Summer - Center of Glass: 0.29, nominal.
 7. Visible Light Transmittance (VLT): 51 percent, nominal.
 8. Solar Heat Gain Coefficient (SHGC): 0.23, nominal.
 9. Visible Light Reflectance, Outside: 12 percent, nominal.
 10. Glazing Method: Dry glazing method, gasket glazing.

2.5 MONOLITHIC GLAZING UNITS

- A. Type GL-04 - Monolithic Interior Vision Glazing:
1. Applications: Interior glazing unless otherwise indicated.
 2. Glass Type: Annealed float glass.
 3. Tint: Clear.
 4. Thickness: 1/4 inch, nominal.
- B. Type GL-03 - Monolithic Safety Glazing: Non-fire-rated.
1. Applications:
 - a. Glazed lites in doors, except fire doors.
 - b. Glazed sidelights to doors, except in fire-rated walls and partitions.
 - c. Other locations required by applicable federal, state, and local codes and regulations.
 - d. Other locations indicated on drawings.
 2. Glass Type: Fully tempered safety glass as specified.
 3. Tint: Clear.
 4. Thickness: 1/4 inch, nominal.

2.6 GLAZING COMPOUNDS

- A. Butyl Sealant: Single component; ASTM C920, Grade NS, Class 12-1/2, Uses M and A, Shore A hardness of 10 to 20; black color.
- B. Silicone Sealant: Single component; neutral curing; capable of water immersion without loss of properties; nonbleeding, nonstaining; ASTM C920, Type S, Grade NS, Class 25, Uses M, A, and G; with cured Shore A hardness range of 15 to 25; color as selected.

2.7 ACCESSORIES

- A. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch by width of glazing rabbet space minus 1/16 inch by height to suit glazing method and pane weight and area.
- B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Minimum 3 inch long by one half the height of the glazing stop by thickness to suit application, self adhesive on one face.
- C. Glazing Tape, Back Bedding Mastic Type: Preformed, butyl-based, 100 percent solids compound with integral resilient spacer rod applicable to application indicated; 5 to 30 cured Shore A durometer hardness; coiled on release paper; black color.
- D. Glazing Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.

PART 3 EXECUTION

3.1 VERIFICATION OF CONDITIONS

- A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.
- B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.
- C. Verify that sealing between joints of glass framing members has been completed effectively.
- D. Proceed with glazing system installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.
- B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.3 INSTALLATION, GENERAL

- A. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.
- B. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.
- C. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.
- D. Prevent glass from contact with any contaminating substances that may be the result of construction operations such as, and not limited to the following; weld splatter, fire-safing, plastering, mortar droppings, etc.

3.4 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)

- A. Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.
- B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.
- C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.
- D. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.5 INSTALLATION - WET/DRY GLAZING METHOD (TAPE AND SEALANT)

- A. Application - Interior Glazed: Set glazing infills from the interior of the building.
- B. Cut glazing tape to length and install against permanent stops, projecting 1/16 inch above sight line.
- C. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.
- D. Rest glazing on setting blocks and push against tape to ensure full contact at perimeter of pane or unit.

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- E. Install removable stops, spacer shims inserted between glazing and applied stops at 24 inch intervals, 1/4 inch below sight line.
- F. Fill gaps between pane and applied stop with silicone type sealant to depth equal to bite on glazing, to uniform and level line.
- G. Carefully trim protruding tape with knife.

3.6 FIELD QUALITY CONTROL

- A. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.
- B. Monitor and report installation procedures and unacceptable conditions.

3.7 CLEANING

- A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.
- B. Remove nonpermanent labels immediately after glazing installation is complete.
- C. Clean glass and adjacent surfaces after sealants are fully cured.
- D. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.8 PROTECTION

- A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.
- B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

END OF SECTION

SECTION 09 2116 - GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Performance criteria for gypsum board assemblies.
- B. Metal stud wall framing.
- C. Metal channel ceiling framing.
- D. Acoustic insulation.
- E. Gypsum sheathing.
- F. Cementitious backing board.
- G. Gypsum board.
- H. Joint treatment and accessories.
- I. Textured finish system.

1.2 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Wood blocking product and execution requirements.
- B. Section 07 2500 - Weather Barriers: Water-resistive barrier over sheathing.
- C. Section 07 9200 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.

1.3 REFERENCE STANDARDS

- A. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members; 2016.
- B. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2010 (Reaffirmed 2016).
- C. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 1999 (Reaffirmed 2016).
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2017.

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- E. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2015.
- F. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2014.
- G. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2012.
- H. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2015.
- I. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2013.
- J. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2015.
- K. 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.
- L. ASTM C1047 - Standard Specification for Accessories For Gypsum Wallboard and Gypsum Veneer Base; 2014a.
- M. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2013.
- N. ASTM C1178/C1178M - Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel; 2013.
- O. ASTM C1280 - Standard Specification for Application of Gypsum Sheathing Board; 2013.
- P. ASTM C1288 - Standard Specification for Discrete Non-Asbestos Fiber-Cement Interior Substrate Sheets; 2014.
- Q. ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units; 2019.
- R. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.
- S. ASTM C1629/C1629M - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels; 2015.
- T. ASTM C1658/C1658M - Standard Specification for Glass Mat Gypsum Panels; 2013.
- U. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2016.
- V. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009.

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- W. ASTM E413 - Classification for Rating Sound Insulation; 2010.
- X. GA-216 - Application and Finishing of Gypsum Board; 2013.
- Y. GA-600 - Fire Resistance Design Manual; 2015.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.
- C. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

PART 2 PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.
 - 1. See PART 3 for finishing requirements.
- B. Interior Partitions, Indicated as Sound-Rated: Provide completed assemblies with the following characteristics:
 - 1. Acoustic Attenuation: STC as indicated calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.
- C. Fire-Resistance-Rated Assemblies: Provide completed assemblies as indicated.
 - 1. UL Assembly Numbers: Provide construction equivalent to that listed for the particular assembly in the current UL (FRD).

2.2 METAL FRAMING MATERIALS

- A. Manufacturers - Metal Framing, Connectors, and Accessories:
 - 1. ClarkDietrich: www.clarkdietrich.com/#sle.
 - 2. Marino: www.marinoware.com.
 - 3. R-stud, LLC: www.rstud.com/#sle.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.

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- B. Non-structural Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf.
1. Studs: C-shaped with flat or formed webs with knurled faces.
 2. Runners: U shaped, sized to match studs.
 3. Ceiling Channels: C-shaped.
 4. Furring Members: Hat-shaped sections, minimum depth of 7/8 inch.
 5. Resilient Furring Channels: Single leg configuration; 1/2 inch channel depth.
 - a. Products:
 - 1) Same manufacturer as other framing materials.
- C. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection and prevent rotation of studs while maintaining structural performance of partition.
1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI S100.
 2. Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot-dipped galvanized coating.
 3. Provide components UL-listed for use in UL-listed fire-resistance-rated head of partition joint systems indicated on drawings.
 4. Provide mechanical anchorage devices as described above that accommodate deflection while maintaining the fire-resistance rating of the wall assembly.
 - a. Products:
 - 1) FireTrak Corporation; Posi Klip: www.fire-trak.com/#sle.
 - 2) Metal-Lite, Inc; The System: www.metal-lite.net/#sle.
 - 3) Substitutions: See Section 01 6000 - Product Requirements.
- D. Non-structural Framing Accessories:
1. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.
 2. Framing Connectors: ASTM A653/A653M G90 galvanized steel clips; secures cold rolled channel to wall studs for lateral bracing.

2.3 BOARD MATERIALS

- A. Manufacturers - Gypsum-Based Board:
1. American Gypsum Company: www.americangypsum.com.
 2. Georgia-Pacific Gypsum: www.gpgypsum.com.
 3. National Gypsum Company: www.nationalgypsum.com/#sle.
 4. USG Corporation: www.usg.com.

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5. Substitutions: See Section 01 6000 - Product Requirements.
- B. Abuse Resistant Board:
1. Application: throughout building.
 2. Surface Abrasion: Level 3, minimum, when tested in accordance with ASTM C1629/C1629M.
 3. Indentation: Level 2, minimum, when tested in accordance with ASTM C1629/C1629M.
 4. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 5. Glass Mat-Faced Type: Gypsum board, as defined in ASTM C1658/C1658M.
 6. Type: Fire-resistance-rated Type X, UL or WH listed.
 7. Thickness: 5/8 inch, unless otherwise indicated.
 8. Edges: Tapered.
- C. Backing Board For Wet Areas:
1. Application: Surfaces behind tile in wet areas including toilet room walls.
 2. Application: Horizontal surfaces behind tile in wet areas including countertops.
 3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 4. 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.
 5. ASTM Cement-Based Board: Non-gypsum-based, cementitious board complying with ASTM C1288.
 - a. Thickness: 5/8 inch, unless otherwise indicated.
 6. Glass Mat Faced Board: Coated glass mat water-resistant gypsum backing panel as defined in ASTM C1178/C1178M.
 - a. Regular Type: Thickness 5/8 inch, unless otherwise indicated.
- D. Backing Board For Non-Wet Areas: Water-resistant gypsum backing board as defined in ASTM C1396/C1396M; sizes to minimum joints in place; ends square cut.
1. Application: Vertical surfaces behind thinset tile, except in wet areas.
 2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 3. Type: Regular and Type X, in locations indicated.
 4. Type X Thickness: 5/8 inch.
 5. Edges: Tapered.
- E. Exterior Sheathing Board: Sizes to minimize joints in place; ends square cut.
1. Application: Exterior sheathing, unless otherwise indicated.

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2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 3. Glass Mat Faced Sheathing: Glass mat faced gypsum substrate as defined in ASTM C1177/C1177M.
 4. Core Type: Type X, as indicated.
 5. Type X Thickness: 5/8 inch, unless otherwise indicated.
 6. Edges: Square.
- F. Exterior Soffit Board: Exterior gypsum soffit board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
1. Application: Ceilings and soffits in protected exterior areas, unless otherwise indicated.
 2. Types: Type X, in locations indicated.
 3. Type X Thickness: 5/8 inch.
 4. Edges: Tapered.

2.4 GYPSUM BOARD ACCESSORIES

- A. Acoustic Insulation: ASTM C665; preformed mineral-fiber, friction fit type, unfaced; thickness 2 inches.
- B. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not use solvent-based non-curing butyl sealant.
- C. Water-Resistive Barrier: See Section 07 2500.
- D. Finishing Accessories: ASTM C1047, galvanized steel sheet ASTM A924/A924M G90, 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 J-Bead at exposed panel edges.
- E. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
1. Paper Tape: 2 inch wide, creased paper tape for joints and corners, except as otherwise indicated.
 2. Joint Compound: Drying type, vinyl-based, ready-mixed.
- F. Finishing Compound: Surface coat and primer, takes the place of skim coating.
- G. High Build Drywall Surfacer: Vinyl acrylic latex-based coating for spray application, designed to take the place of skim coating and separate paint primer in achieving Level 5 finish.
- H. Textured Finish Materials: Latex-based compound; plain.

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- I. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inches in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion-resistant.
- J. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws, corrosion-resistant.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that project conditions are appropriate for work of this section to commence.

3.2 FRAMING INSTALLATION

- A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.
- B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
 - 1. Level ceiling system to a tolerance of 1/1200.
 - 2. Laterally brace entire suspension system.
- C. Studs: Space studs as indicated.
 - 1. Extend partition framing to structure in all locations, unless otherwise indicated.
 - 2. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.
- D. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.
- E. Blocking: Install wood blocking for support of:
 - 1. Wall-mounted cabinets.
 - 2. Plumbing fixtures.
 - 3. Toilet partitions.
 - 4. Toilet accessories.
 - 5. Wall-mounted door hardware.

3.3 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.

3.4 BOARD INSTALLATION

- A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
- C. Fire-Resistance-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.
- D. Exposed Gypsum Board in Interior Wet Areas: Seal joints, cut edges, and holes with water-resistant sealant.
- E. Exterior Sheathing: Comply with ASTM C1280. Install sheathing vertically, with edges butted tight and ends occurring over firm bearing.
 - 1. Seal joints, cut edges, and holes with water-resistant sealant.
- F. Exterior Soffits: Install exterior soffit board perpendicular to framing, with staggered end joints over framing members or other solid backing.
- G. Cementitious Backing Board: Install over steel framing members and plywood substrate where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.
- H. Installation on Metal Framing: Use screws for attachment of gypsum board except face layer of nonrated double-layer assemblies, which may be installed by means of adhesive lamination.

3.5 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
 - 1. Not more than 30 feet apart on walls and ceilings over 50 feet long.
 - 2. At exterior soffits, not more than 30 feet apart in both directions.
- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

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- D. Moisture Guard Trim: Install on bottom edge of gypsum board according to manufacturer's instructions and in locations indicated on drawings.

3.6 JOINT TREATMENT

- A. Glass Mat Faced Gypsum Board and Exterior Glass Mat Faced Sheathing: Use fiberglass joint tape, embed and finish with setting type 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 3: Walls to receive textured wall finish.
 - 3. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
 - 4. Level 1: 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.
 - 2. Taping, filling, and sanding are not required at surfaces behind adhesive applied ceramic tile and fixed cabinetry.
- D. Spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.

3.7 TEXTURE FINISH

- A. Apply finish texture coating by means of spraying apparatus, over primer, in accordance with manufacturer's instructions.
- B. Texture Required: Medium Orange Peel.

3.8 TOLERANCES

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

SECTION 09 3000 - TILING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Tile for floor applications.
- B. Tile for wall applications.
- C. Ceramic trim.
- D. Non-ceramic trim.

1.2 RELATED REQUIREMENTS

- A. Section 07 9200 - Joint Sealants: Sealing joints between tile work and adjacent construction and fixtures.
- B. Section 09 2116 - Gypsum Board Assemblies: Tile backer board.

1.3 REFERENCE STANDARDS

- A. ANSI A108/A118/A136 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium); 2017.
- B. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2014.
- C. 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).
- D. ANSI A108.1c - Specifications for Contractors Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Bed with Dry-Set or Latex-Portland Cement; 1999 (Reaffirmed 2010).
- E. ANSI A108.2 - American National Standard General Requirements: Materials, Environmental and Workmanship; 2019.
- F. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesives or Water Cleanable Tile-Setting Epoxy Adhesive; 2009 (Revised).
- G. 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).

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- H. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy; 1999 (Reaffirmed 2010).
- I. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout; 1999 (Reaffirmed 2010).
- J. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout; 1999 (Reaffirmed 2010).
- K. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 1999 (Reaffirmed 2010).
- L. ANSI A108.12 - American National Standard for Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar; 1999 (Reaffirmed 2010).
- M. 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).
- N. 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; 2020.
- O. ANSI A108.20 - American National Standard Specifications for Exterior Installation of Vertical and Overhead Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs by the Thin-Bed Method Bonded with Improved Modified Dry-Set Cement Mortar; 2020.
- P. 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).
- Q. ANSI A118.7 - American National Standard Specifications for High Performance Cement Grouts for Tile Installation; 2010 (Revised).
- R. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes For Thin-Set Ceramic Tile And Dimension Stone Installation; 2014.
- S. ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-set Ceramic Tile and Dimension Stone Installation; 2014.
- T. ANSI A118.15 - American National Standard Specifications for Improved Modified Dry-Set Cement Mortar; 2012.
- U. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2013.1.
- V. ANSI A137.2 - American National Standard Specifications for Glass Tile; 2013.
- W. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold Finished; 2013.

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- X. ASTM C373 - Standard Test Methods for Determination of Water Absorption and Associated Properties by Vacuum Method for Pressed Ceramic Tiles and Glass Tiles and Boil Method for Extruded Ceramic Tiles and Non-tile Fired Ceramic Whiteware Products; 2018.
- Y. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.
- Z. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2011.
- AA. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2017.
- AB. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2019.

1.4 DEFINITIONS

- A. General: Definitions in the ASTM A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B. ANSI A108/A118/A136 Series in the latest edition of "American National Standard Specifications for Installation of Ceramic Tile."
- C. Module Size: Actual tile size (minor facial dimension as measured per ASTM C499) plus joint width indicated.
- D. Face Size: Actual tile size, excluding spacer lugs.

1.5 PERFORMANCE REQUIREMENTS

- A. Dynamic Coefficient of Friction: For tile installed on walkway surfaces, provide products to meet ANSI A137.1:
 - 1. Level Surfaces: Minimum wet DCOF AcuTest value of .42

1.6 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by affected installers.
 - 1. Conference to include submittal review of all products.

1.7 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

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- 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, and setting details.
 - 1. Installer to layout full size movement joint locations for floor or wall on-site according to TCNA (HB). Submit layout to architect for approval prior to installation.
- D. **Samples for verification:** Full-size units of each type and composition of tile and trim for each color and finish as indicated.
- E. **Material Test Reports:** For each tile-setting and -grouting product.
- F. **Master Grade Certificate:** Submit for each type of tile, signed by the tile manufacturer and tile installer.
- G. **Maintenance Data:** Include recommended cleaning methods, cleaning materials, and stain removal methods.
- H. **Installer Qualification Data:** For qualified Installer indicated below, documentation to be submitted prior to bid acceptance.
- I. **Maintenance Materials:** Furnish the following for Owner's use in maintenance of project. Furnish maintenance materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.
 - 2. Extra Tile: 3 percent of each size, color, and surface finish combination, but not less than 1 box of each type.
 - 3. Extra Grout: 3 percent of amount installed for each type, composition, and color indicated.
 - 4. Trim Units: Furnish quantity of full-size units equal to three (3) percent of amount installed for each type, composition, color, pattern, and size indicated.

1.8 QUALITY ASSURANCE

- A. Maintain one copy of ANSI A108/A118/A136 and TCNA (HB) on site.
- B. **Manufacturer Qualifications:** Company specializing in manufacturing the types of products specified in this section, with minimum five years of documented experience.
- C. **Installer Qualifications:** Company specializing in performing tile installation, with minimum of five years of documented experience, have completed three (3) commercial projects of similar scope, square footage and complexity and submit one of the following:

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1. Are trained and/or certified by the material manufacturer for installation of the product specified.
 2. Installer is a five-star member of the National Tile Contractors Association or a Trowel of Excellence member of the Tile Contractors' Association of America.
 3. Installer's supervisor for Project holds the International Masonry Institute's Foreman Certification.
 4. Installer employs Ceramic Tile Education Foundation Certified Installers or installers recognized by the U.S. Department of Labor as Journeyman Tile Layers
- D. The above qualified installer is required to be on-site during installation.
- E. Source Limitations:
1. Tile: Obtain all tile from one source or producer. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.
 2. Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from one manufacturer and each aggregate from one source or producer.

1.9 MOCK-UPS

- A. See Section 01 4000 - 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.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.
- D. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.
- E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

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1.11 FIELD CONDITIONS

- A. Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.
- B. Maintain ambient and substrate temperature above 50 degrees F and below 100 degrees F during installation and curing of setting materials.
- C. Concrete Curing: Do not install flooring material over concrete substrates unless substrates meet flooring, adhesive, or crack suppression membrane manufacturer's current requirements for bond test, calcium chloride test, relative humidity test and pH test.

PART 2 PRODUCTS

2.1 TILE

- A. Manufacturers: All products of each type by the same manufacturer.
 - 1. See Finish Legend for acceptable manufacturers.
- B. Glazed Wall Tile: ANSI A137.1, standard grade.
 - 1. Moisture Absorption: 7.0 to 20.0 percent as tested in accordance with ASTM C373.
 - 2. Face: Plain with eased edges.
 - 3. Product, Color, Pattern and Size: As indicated in the Finish Legend of the drawings.
- C. Porcelain Tile: ANSI A137.1, standard grade.
 - 1. Face: Plain with eased edges.
 - 2. Product, Color, Pattern and Size: As specified in the Finish Legend of the drawings.

2.2 TRIM AND ACCESSORIES

- A. Trim: Matching bullnose, double bullnose, cove base, and cove ceramic shapes in sizes coordinated with field tile.
 - 1. Applications:
 - a. Reference drawings for locations.
 - b. Open Edges: Bullnose.
 - c. Inside Corners: Jointed.
 - d. Floor to Wall Joints: Cove base.
 - 2. Manufacturers: As scheduled.

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- B. Non-Ceramic Trim: Satin natural anodized extruded aluminum, style and dimensions to suit application, for setting using tile mortar or adhesive.
 - 1. Applications:
 - a. Reference drawings for profiles and locations.
 - b. Open edges of floor tile.
 - c. Transition between floor finishes of different heights.
 - d. Thresholds at door openings.
 - 2. Manufacturers:
 - a. Schluter-Systems: www.schluter.com/#sle.
 - b. Genesis APS International: www.genesis-aps.com/#sle.

2.3 SETTING MATERIALS

- A. Improved Latex-Portland Cement Mortar Bond Coat: ANSI A118.15.
 - 1. Products:
 - a. Custom Building Products: www.custombuildingproducts.com.
 - b. LATICRETE International, Inc: www.laticrete.com/#sle.
- B. Epoxy Adhesive and Mortar Bond Coat: ANSI A118.3.
 - 1. Products:
 - a. Custom Building Products: www.custombuildingproducts.com.
 - b. LATICRETE International, Inc: www.laticrete.com/#sle.
- C. Mortar Bed Materials: Pre-packaged mix of Portland cement, sand, latex additive, and water for any recessed slabs and shower pans.
 - 1. Products:
 - a. LATICRETE International, Inc: www.laticrete.com/#sle.

2.4 GROUTS

- A. High Performance Polymer Modified Grout: ANSI A118.7 polymer modified cement grout.
 - 1. Applications: Use this type of grout where indicated and where no other type of grout is indicated.
 - 2. Use sanded grout for joints 1/8 inch wide and larger; use unsanded grout for joints less than 1/8 inch wide.
 - 3. Color(s): As indicated on drawings.
 - 4. Products:

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- a. LATICRETE International, Inc; LATICRETE PERMACOLOR Grout:
www.laticrete.com/#sle.
- B. Epoxy Grout: ANSI A118.3 chemical resistant and water-cleanable epoxy grout.
 - 1. Applications: All kitchens and restrooms.
 - 2. Color(s): As indicated on drawings.
 - 3. Products:
 - a. LATICRETE International, Inc; LATICRETE SPECTRALOCK PRO Premium Grout: www.laticrete.com/#sle.

2.5 MAINTENANCE MATERIALS

- A. Tile Sealant: Gunnable, silicone, siliconized acrylic, or urethane sealant; moisture and mildew resistant type.
 - 1. Applications: At all soft joints and between tile and plumbing fixtures and tile and another material.
 - 2. Color(s): To match grout color.
 - 3. Products:
 - a. LATICRETE International, Inc; LATICRETE LATASIL: www.laticrete.com/#sle.

2.6 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 and ANSI A118.12.
 - 1. Crack Resistance: No failure at 1/16 inch gap, minimum; comply with ANSI A118.12.
 - 2. Fluid or Trowel Applied Type:
 - a. Material: Synthetic rubber.
 - b. Thickness: 25 mils, minimum, dry film thickness.
 - c. Coverage: Cover 100% of floor under tile and 6" up wall (behind wall tile) in restrooms/kitchens (wet areas) only.
 - d. Products:
 - 1) LATICRETE International, Inc; LATICRETE HYDRO BAN:
www.laticrete.com/#sle.

PART 3 EXECUTION

3.1 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.
- 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 as Follows:
 - a. Alkalinity (pH): ASTM F710.
 - b. Internal Relative Humidity: ASTM F2170.
 - c. Moisture Vapor Emission: ASTM F1869.
 - 2. Obtain instructions if test results are not within limits recommended by tiling material manufacturer and setting material manufacturer.

3.2 PREPARATION

- A. Protect surrounding work from damage.
- B. Vacuum clean surfaces and damp clean.
- C. Subsurface Tolerances for Mortar Bed Methods: for thick bed (mortar bed) ceramic and stone tile installations and self-leveling methods: maximum allowable variation in the installation substrate - 1/4" in 10'
- D. Subsurface Tolerances for Thin-Bed Methods: for thin bed ceramic tile installation when a Cementitious bonding material will be used, including medium bed mortar maximum allowable variation in the tile substrate - for tile with all edges shorter than 15", maximum allowable variation is 1/4" in 10' from the required plane, with no more than 1/16" variation in 12" when measured from the high points in the surface. For tiles with at least one edge 15" in length or longer, maximum allowable variation is 1/8" in 10' from the required plane, with no more than 1/16" variation in 24" when measured from the high points in the surface. For modular substrates units such as plywood panels or adjacent concrete masonry units, adjacent edges cannot exceed 1/32" differences in height.
- E. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

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- F. Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.

3.3 INSTALLATION - GENERAL

- A. Factory Blending: For tile exhibiting color variations within ranges selected during Sample submittals, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.
- B. Install tile and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.20, manufacturer's instructions, and TCNA (HB) recommendations.
- C. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.
 - 1. Provide uniform joint widths, unless otherwise indicated. Use 1/3 offset joints to avoid lippage if using large format tile, check with manufacturer's recommendations.
- D. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
- 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. Install faces of adjacent tiles in the same plane to be flush.
- G. Form internal angles square and external angles bullnosed.
- H. Install non-ceramic trim in accordance with manufacturer's instructions.
- I. Sound tile after setting. Replace hollow sounding units.
- J. Keep control and expansion joints free of mortar, grout, and adhesive.
- K. Prior to grouting, allow installation to completely cure; minimum of 48 hours.
- L. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.
- M. 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.

3.4 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. Where waterproofing/ antifracture membrane is indicated, install in accordance with TCNA (HB) Method F122, with latex-Portland cement grout and F125.

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- B. Install tile-to-tile floor movement joints in accordance with TCNA (HB) Method EJ171F.

3.5 INSTALLATION - FLOORS - MORTAR BED METHODS

- A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F112, bonded, unless otherwise indicated.
 - 1. Where waterproofing membrane is indicated, with standard grout or no mention of grout type, install in accordance with TCNA (HB) Method F121.
- B. Waterproofing Membrane: Install as recommended by manufacturer .
- C. Mortar Bed Thickness: coordinate with recess and tile product, unless otherwise indicated.

3.6 INSTALLATION - WALL TILE

- A. Over cementitious backer units on studs, install in accordance with TCNA (HB) Method W244, using membrane at toilet rooms.
- B. Over coated glass mat backer board on studs, install in accordance with TCNA (HB) Method W245.

3.7 CLEANING

- A. Clean tile and grout surfaces.

3.8 PROTECTION

- A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION

SECTION 09 5100 - ACOUSTICAL CEILINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Suspended metal grid ceiling system.
- B. Acoustical units.

1.2 RELATED REQUIREMENTS

- A. Division 21 - Fire-Suppression Sprinkler Systems: Sprinkler heads in ceiling system.
- B. Division 23 - Air Outlets and Inlets: Air diffusion devices in ceiling.
- C. Division 26 - Interior Lighting: Light fixtures in ceiling system.
- D. Division 27 - Public Address Systems: Speakers in ceiling system.
- E. Division 28 - Fire Detection and Alarm: Fire alarm components in ceiling system.

1.3 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; 2017.
- B. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021.
- C. ASTM C635/C635M - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2013a.
- D. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2013.
- E. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2014.
- F. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2014.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

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- B. Do not install acoustical units until after interior wet work is dry.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Shop Drawings: Indicate grid layout and related dimensioning.
- C. Product Data: Provide data on suspension system components and acoustical units.
- D. Samples: Submit two samples 6 by 6 inch in size illustrating material and finish of acoustical units.
- E. Samples: Submit two samples each, 6 inches long, minimum, of suspension system main runner, cross runner, and perimeter molding.
- F. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.
 - 2. Extra Acoustical Units: Quantity equal to 5 percent of total installed.

1.6 QUALITY ASSURANCE

- A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years documented experience.
- B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years documented experience.

1.7 FIELD CONDITIONS

- A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acoustic Tiles/Panels:
 - 1. See Finish Legend.

- B. Suspension Systems:
 - 1. As indicated on Finish Legend in drawings.

2.2 ACOUSTICAL UNITS

- A. Acoustical Units - General: ASTM E1264, Class A.
- B. Acoustical Panels: Painted mineral fiber, with the following characteristics:
 - 1. As indicated on Finish Legend in drawings.
 - 2. Classification: ASTM E1264 Type III.
 - 3. Light Reflectance: 85 percent, determined in accordance with ASTM E1264.
 - 4. Ceiling Attenuation Class (CAC): 23, determined in accordance with ASTM E1264.
 - 5. Panel Edge: Square.
 - 6. Suspension System: Exposed grid.
- C. Acoustical Panels: Mineral fiber with membrane-faced overlay, with the following characteristics:
 - 1. As indicated on Finish Legend in drawings.
 - 2. Classification: ASTM E1264 Type IV.
 - 3. Panel Edge: Square.
 - 4. Suspension System: Exposed grid.
- D. Acoustical Panels: Glass fiber with membrane-faced overlay, with the following characteristics:
 - 1. As indicated on Finish Legend in drawings.
 - 2. Classification: ASTM E1264 Type XII.
 - 3. Panel Edge: Square.
 - 4. Suspension System: Concealed.
- E. Acoustical Panels: Open-cell melamine-based foam.
 - 1. As indicated on Finish Legend in drawings.

2.3 SUSPENSION SYSTEM(S)

- A. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, hold down clips, stabilizer bars, clips, and splices as required.
 - 1. Materials:

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- a. Steel Grid: ASTM A653/A653M, G30 coating, unless otherwise indicated.
 - b. Aluminum Grid: Aluminum sheet, ASTM B209/B209M.
- B. Exposed Suspension System: Aluminum grid and cap.
- 1. Structural Classification: Light-duty, when tested in accordance with ASTM C635/C635M.
 - 2. Profile: Tee; 15/16 inch face width.
- C. Exposed Suspension System: Hot-dipped galvanized steel grid and cap.
- 1. Application(s): Fire-rated assemblies.
 - 2. Structural Classification: Intermediate-duty, when tested in accordance with ASTM C635/C635M.

2.4 ACCESSORIES

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
- B. Hanger Wire: 12 gauge, 0.08 inch galvanized steel wire.
- C. Hold-Down Clips: Manufacturer's standard clips to suit application.
- D. Seismic Clips: Manufacturer's standard clips for seismic conditions and to suit application.
- E. Perimeter Moldings: Same metal and finish as grid.
- F. Touch-up Paint: Type and color to match acoustical and grid units.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that layout of hangers will not interfere with other work.

3.2 INSTALLATION - SUSPENSION SYSTEM

- A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.
- B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

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- C. Locate system on room axis according to reflected plan.
- D. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
 - 1. Use longest practical lengths.
 - 2. Overlap and rivet corners.
- E. Suspension System, Non-Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- F. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- G. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- H. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.
- I. Do not eccentrically load system or induce rotation of runners.

3.3 INSTALLATION - ACOUSTICAL UNITS

- A. Install acoustical units in accordance with manufacturer's instructions.
- B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Fit border trim neatly against abutting surfaces.
- D. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- E. Cutting Acoustical Units:
 - 1. Make field cut edges of same profile as factory edges.
- F. Install hold-down clips on each panel to retain panels tight to grid system; as required to comply with fire rating requirements.
- G. Install hold-down clips on panels within 20 ft of an exterior door.

3.4 TOLERANCES

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.

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- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION

SECTION 09 5426 - LINEAR WOOD CEILINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Suspended metal ceiling grid system and perimeter trim.

1.2 REFERENCE STANDARDS

- A. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2013.
- B. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2014.

1.3 DESIGN REQUIREMENTS

- A. Design components to ensure light fixtures will not induce eccentric loads. Where components may induce rotation of ceiling system components, provide stabilizing reinforcement.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate work of this section with installation of mechanical and electrical components and with other construction activities affected by work of this section.
- B. Preinstallation Meeting: Convene one week before starting work of this section.
- C. Sequencing: Supply hanger clips during steel deck erection. Supply additional hangers and inserts as required.

1.5 SUBMITTALS

- A. Product Data: Furnish for component profiles.
- B. Shop Drawings: Indicate reflected ceiling plan and details of junction with dissimilar materials.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five years documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section.

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1. Minimum five years documented experience.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Accept factory-finished products on site in manufacturer's unopened factory packaging only; reject opened packages.
- B. Protect factory-finished products from damage to appearance by storing products in manufacturer's unopened factory packaging in dry storage area.

1.8 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Provide five year manufacturer warranty; include coverage for corrosion resistance and discoloration of surface finish.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Linear Wood Ceilings:
 1. 9-Wood: 9wood.com
 2. Armstrong World Industries, Inc; Woodworks: www.armstrongceilings.com/#sle.
 3. Rulon: www.rulon.com

2.2 LINEAR WOOD CEILING

- A. Linear Wood Ceiling and Soffit System: Panels, suspension members, trim and accessories as required to provide a complete system.
- B. Performance Requirements:
 1. Design to support imposed loads of indicated items without eccentric loading of supports.
 2. Design for maximum deflection of 1/360 of span.

2.3 COMPONENTS

- A. Linear Panels: Strips shall be made from prime grade, all-natural wood with factory finish.
 1. Species: ____.
 2. Edge Profile: Square.

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3. Length: Equal.
 4. Design: Panelized.
- B. Suspension Members: Formed steel sections, with integral attachment points; galvanized finish; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
- C. Suspension Wire: Size and type as required for application, seismic requirements, and ceiling system flatness requirement specified.

2.4 FABRICATION

- A. Shop cut linear panels to accommodate mechanical and electrical items.
- B. Factory-form internal and external corners of same material, thickness, finish, and profile to match exposed linear panels; back brace internal corners.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.

3.2 INSTALLATION

- A. Suspension Components:
1. Install after above-ceiling work is complete in accordance with manufacturer's instructions, ASTM C636/C636M, and ASTM E580/E580M.
 2. Hang carrying members independent of walls, columns, ducts, light fixtures, pipe, and conduit; where carrying members are spliced, avoid visible displacement of face panels with adjacent panels.
 3. Where ducts or other equipment prevent regular spacing of hangers, reinforce nearest adjacent hangers to span the required distance.
- B. Linear Panels:
1. Install linear panels and other system components in accordance with manufacturer's instructions.

3.3 TOLERANCES

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.
- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

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C. Maximum Variation From Dimensioned Position: 1/4 inch.

END OF SECTION

SECTION 09 6700 - FLUID-APPLIED FLOORING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Fluid-applied flooring and base.
- B. Divider strips and accessories.

1.2 SUBMITTALS

- A. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns and colors available.
- B. Maintenance Data: Include maintenance procedures, recommended maintenance materials, procedures for stain removal, repairing surface, and suggested schedule for cleaning.

1.3 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years documented experience.
- B. Applicator Qualifications: Company specializing in performing the work of this section.
 - 1. Minimum five years of documented experience.
 - 2. Approved by manufacturer.
- C. Supervisor Qualifications: Trained by product manufacturer, under direct full time supervision of manufacturer's plant trained foreman.

1.4 MOCK-UPS

- A. Construct mock-up(s) of fluid applied flooring to serve as basis for evaluation of texture and workmanship.
 - 1. Number of Mock-Ups to be Prepared: One.
 - 2. Use same materials and methods for use in the work.
 - 3. Locate where directed.
 - 4. Minimum Size: 48 inches by 48 inches.
- B. Obtain approval of mock-up by Architect before proceeding with work.
- C. Accepted mock-up may remain as part of the work.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store resin materials in a dry, secure area.
- B. Store materials for three days prior to installation in area of installation to achieve temperature stability.

1.6 FIELD CONDITIONS

- A. Maintain minimum temperature in storage area of 55 degrees F.
- B. Store materials in area of installation for minimum period of 24 hours prior to installation.
- C. Maintain ambient temperature required by manufacturer 72 hours prior to, during, and 24 hours after installation of materials.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Fluid-Applied Flooring:
 - 1. See Finish Legend on drawings.

2.2 FLUID-APPLIED FLOORING SYSTEMS

- A. Fluid-Applied Flooring Type FF-1: Epoxy base coat(s), with broadcast aggregate.
 - 1. Aggregate: Quartz granules.
 - 2. Top Coat: Polyurethane.
 - 3. System Thickness: 1/8 inch, nominal, dry film thickness (DFT).
 - 4. Texture: Slip resistant.
 - 5. Sheen: Matte.
 - 6. Color: As scheduled.

2.3 ACCESSORIES

- A. Base Caps: Zinc with projecting base of 1/8 inch; color as selected.
- B. Cant Strips: Molded material compatible with flooring.
- C. Subfloor Filler: Type recommended by fluid-applied flooring manufacturer.

- D. Primer: Type recommended by fluid-applied flooring manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive flooring.
- 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 flooring.
- C. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of materials to subfloor surfaces.
- D. Verify that required floor-mounted utilities are in correct location.

3.2 PREPARATION

- A. Remove subfloor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with subfloor filler.
- B. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Grind irregularities above the surface level. Prohibit traffic until filler is cured.
- C. Vacuum clean substrate.
- D. Apply primer to surfaces required by flooring manufacturer.

3.3 INSTALLATION - FLOORING

- A. Apply in accordance with manufacturer's instructions.
- B. Apply each coat to minimum thickness required by manufacturer.
- C. Finish to smooth level surface.
- D. Cove at vertical surfaces.

3.4 PROTECTION

- A. Prohibit traffic on floor finish for 48 hours after installation.

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- B. Barricade area to protect flooring until fully cured.

END OF SECTION

SECTION 09 6813 - TILE CARPETING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Carpet tile, fully adhered.

1.2 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied flooring.

1.3 REFERENCE STANDARDS

- A. ASTM D2859 - Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials; 2016.
- B. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2014c.
- C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.
- D. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2011.
- E. CRI 104 - Standard for Installation of Commercial Carpet; 2015.
- F. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2015.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.
- C. Shop Drawings: Indicate layout of joints and direction of carpet pile.
- D. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.
- E. Accessory Samples: Submit two six inch long samples of edge strip, base cap, and stair nosing.

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- F. Operation and Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.
 - 2. Extra Carpet Tiles: Quantity equal to 5 percent of total installed of each color and pattern installed.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet tile with minimum five years documented experience.
- B. Installer Qualifications: Company specializing in installing carpet tile with minimum five years documented experience.

1.6 FIELD CONDITIONS

- A. Store materials in area of installation for minimum period of 24 hours prior to installation.
- B. Maintain minimum 70 degrees F ambient temperature 24 hours prior to, during and 24 hours after installation.
- C. Ventilate installation area during installation and for 72 hours after installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Tile Carpeting:
 - 1. See Finish Legend.

2.2 MATERIALS

- A. Tile Carpeting: Tufted, manufactured in one color dye lot.
 - 1. Tile Size: As shown in Drawings.
 - 2. Colors and sizes: As shown on Drawings.
 - 3. Pattern: As shown on Drawings.
 - 4. Critical Radiant Flux: Minimum of 0.22 watts/sq cm, when tested in accordance with ASTM E648 or NFPA 253.
 - 5. Surface Flammability Ignition: Pass ASTM D2859 (the "pill test").

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6. Fiber: Eco solution q nylon.
7. Dye Method: 100% Solution Dyed.
8. Construction: Multi-level pattern loop.
9. Pile Weight: (varies) oz/sq yd.
10. Pile Density: (varies)
11. Primary Backing Material: Polypropylene.
12. Total Weight: (varies) oz/sq yd.

2.3 ACCESSORIES

- A. Subfloor Filler: White premix latex; type recommended by flooring material manufacturer.
- B. Edge Strips: As indicated.
- C. Carpet Tile Adhesive: Recommended by carpet tile manufacturer; releasable type.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that subfloor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.
- B. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to subfloor surfaces.
- C. Cementitious Subfloor Surfaces: Verify that substrates are ready for flooring installation by testing for moisture and alkalinity (pH).
 1. Test as Follows:
 - a. Alkalinity (pH): ASTM F710.
 - b. Moisture Vapor Emission: ASTM F1869.
 2. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.

3.2 PREPARATION

- A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.
- B. Remove subfloor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with subfloor filler.

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- C. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.
- D. Vacuum clean substrate.

3.3 INSTALLATION

- A. Starting installation constitutes acceptance of subfloor conditions.
- B. Install carpet tile in accordance with manufacturer's instructions and CRI 104 (Commercial).
- C. Blend carpet from different cartons to ensure minimal variation in color match.
- D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.
- E. Lay carpet tile in indicated pattern, with pile direction parallel to next unit, set parallel to building lines.
- F. Fully adhere carpet tile to substrate.
- G. Locate change of color or pattern between rooms under door centerline.
- H. Trim carpet tile neatly at walls and around interruptions.
- I. Complete installation of edge strips, concealing exposed edges.

3.4 CLEANING

- A. Remove excess adhesive without damage, from floor, base, and wall surfaces.
- B. Clean and vacuum carpet surfaces.

END OF SECTION

SECTION 09 8430 - SOUND-ABSORBING WALL AND CEILING UNITS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Sound-absorbing panels.
- B. Sound-absorbing ceiling baffles.

1.2 REFERENCE STANDARDS

- A. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method; 2009a.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.
- C. ASTM E795 - Standard Practices for Mounting Test Specimens During Sound Absorption Tests; 2016.

1.3 SUBMITTALS

- A. Product Data: Manufacturer's printed data sheets for products specified.
- B. Shop Drawings: Fabrication and installation details, panel layout, fabric orientation, wood grain orientation, and baffle layout.
- C. Selection Samples: Manufacturer's color charts for baffle material and fabric covering, indicating full range of fabrics, colors, and patterns available.
- D. Verification Samples: Fabricated samples of each type of baffle and panel specified; 6 by 12 inch for baffles and 12 by 12 inch for panels, showing construction, edge details, and fabric covering.
- E. Test Reports: Certified test data from an independent test agency verifying that panels meet specified requirements for acoustical and fire performance.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.
 - 2. Extra Panels: Quantity equal to 5 percent of total installed, but not less than one of each type.

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1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with at least five years of documented experience.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect acoustical units from moisture during shipment, storage, and handling. Deliver in factory-wrapped bundles; do not open bundles until units are needed for installation.
- B. Maintain minimum room temperature and humidity levels approximately that of occupancy for a period of two days prior to delivery of materials to installation space, during installation, and after installation.
- C. Store units flat, in dry, well-ventilated space; do not stand on end.
- D. Store materials to acclimatize in area of installation for minimum period of 24 hours at temperature and humidity levels approximately that of occupancy prior to installation.
- E. Protect edges from damage.

PART 2 PRODUCTS

2.1 FABRIC-COVERED SOUND-ABSORBING UNITS

- A. Basis of Design Manufacturers:
 - 1. Quiet Technology Systems: www.qtechsys.com.
 - 2. Xorel Artform: www.xorelartform.com.
- B. General:
- C. Fabric-Covered Acoustical Panels for Walls, Code **AC-# through AC-#**:
 - 1. Panel Core: Manufacturer's standard rigid or semi-rigid fiberglass core.
 - 2. Panel Size: Multiple sizes, As scheduled.
 - 3. Panel Thickness: As scheduled.
 - 4. Edges: Perimeter edges reinforced by a formulated resin hardener.
 - 5. Corners: Square.
 - 6. Fabric: Woven polyester.
 - 7. Color: As indicated.
 - 8. Mounting Method: Back-mounted with mechanical fasteners.

2.2 SOUND-ABSORBING CEILING BAFFLES

- A. Basis of Design Manufacturer:
 - 1. Turf Design: www.turf.design.
- B. Sound Absorbing Units: Prefinished, factory assembled fabric-covered panels.
 - 1. Surface Burning Characteristics: Flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84, Class A.
- C. Sound Absorbing Ceiling Baffles, Code **AC-# through AC-#**:
 - 1. Sound Absorption: Noise Reduction Coefficient (NRC) or Sound Absorption Average (SAA) of NRC 500hz > 1.00, NRC 1000hz 1.50, Avg. apparent NRC > 1.50 when tested in accordance with ASTM C423 for Type J mounting, per ASTM E795.
 - 2. Baffle Size: 8.68 inches by length indicated on Drawings.
 - 3. Baffle Thickness: 2.125 inches.
 - 4. Edges: Perimeter edges reinforced by single sheet of folded felt.
 - 5. Corners: Square, Exposed Felt.
 - 6. Fabric: Polyester Felt, 99% Recycled Material.
 - 7. Color: As selected by Architect from manufacturer's full range.
 - 8. Mounting: Horizontally suspended from ceiling or structure by one edge of panel. Suspended with paint-grade Unistrut P1000T Standard and mounting hardware, supplied by installer.

2.3 FABRICATION

- A. Fabric Wrapped, General: Fabricate panels to sizes and configurations as indicated, with fabric facing installed without sagging, wrinkles, blisters, or visible seams.
 - 1. Where radiused or mitered corners are indicated, install fabric to avoid seams or gathering of material.
- B. Tolerances: Fabricate to finished tolerance of plus or minus 1/16 inch for thickness, overall length and width, and squareness from corner to corner.

2.4 ACCESSORIES

- A. Back-Mounting Accessories: Manufacturer's standard accessories for concealed support, designed to allow panel removal, and as follows:
- B. Ceiling-Suspended Accessories: Manufacturer's standard accessories at locations as indicated on each acoustical unit, sized appropriately for weight of acoustical unit.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates for conditions detrimental to installation of acoustical units. Proceed with installation only after unsatisfactory conditions have been corrected.
- B. Coordinate any and all switches, strobes, thermostats, and other devices that interfere with panel locations. Provide escutcheon plates at panel cut outs. Adhere fabric at cut outs to prevent fraying.

3.2 INSTALLATION

- A. Install acoustical units in locations as indicated, following manufacturer's installation instructions.
- B. Install mounting accessories and supports in accordance with shop drawings.
- C. Align panels accurately, with edges plumb and top edges level. Scribe to fit accurately at adjoining work and penetrations.
- D. Suspend Unistrut for to support ceiling baffles at lengths, locations and elevations indicated.
- E. Install acoustical units to construction tolerances of plus or minus 1/16 inch for the following:
 - 1. Plumb and level.
 - 2. Flatness.
 - 3. Width of joints.

3.3 CLEANING

- A. Clean fabric facing upon completion of installation from dust and other foreign materials, following manufacturer's instructions.
- B. Vacuum occasionally to remove any particulate matter and air-borne debris or dust. Compressed air may be used to dust the material in difficult to reach areas or for large assemblies.

3.4 PROTECTION

- A. Provide protection of installed acoustical panels until Date of Substantial Completion.

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- B. Replace panels that cannot be cleaned and repaired to satisfaction of the Architect.

END OF SECTION

SECTION 09 9113 - EXTERIOR PAINTING

PART 1 GENERAL

1.1 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.
- 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. Items indicated to receive other finishes.
 - 3. Items indicated to remain unfinished.
 - 4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
 - 5. Floors, unless specifically indicated.
 - 6. Glass.
 - 7. Concealed pipes, ducts, and conduits.

1.2 RELATED REQUIREMENTS

- A. Section 05 5000 - Metal Fabrications: Shop-primed items.
- B. Section 09 9123 - Interior Painting.

1.3 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. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).
- C. SSPC-SP 6 - Commercial Blast Cleaning; 2007.

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1.4 SUBMITTALS

- A. 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.
- B. Samples: Submit two paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
 - 1. Where sheen is specified, submit samples in only that sheen.
- C. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.
 - 2. Label each container with color in addition to the manufacturer's label.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum five years documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum five years experience and approved by manufacturer.

1.6 MOCK-UPS

- A. See Section 01 4000 - Quality Requirements, for general requirements for mock-up.
- B. Provide panel, 10 feet long by 10 feet wide, illustrating paint special color, texture, and finish.
- C. Accepted mock-up may remain as part of the work.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

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- 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 and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.8 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the paint product manufacturer's temperature ranges.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.
- B. Paints:
 - 1. Benjamin Moore & Co: www.benjaminmoore.com.
 - 2. Dunn-Edwards: www.dunnedwards.com.
 - 3. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
- C. Primer Sealers: Same manufacturer as top coats.
- D. Substitutions: See Section 01 6000 - Product Requirements.

2.2 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. 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.

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3. Supply each paint material in quantity required to complete entire project's work from a single production run.
 4. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is described explicitly 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.
 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. 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: As indicated on drawings.

2.3 PAINT SYSTEMS - EXTERIOR

- A. Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including concrete, concrete masonry units, fiber cement siding, and primed metal.
1. Two top coats and one coat primer.
 2. Top Coat(s): Exterior Latex.
 - a. Products:
 - 1) Benjamin Moore SuperSpec 100% Acrylic Flat 183.
 - 2) Dunn Edwards EverShield Exterior Flat.
 - 3) PPG Paints Speedhide Exterior Latex, 6-610XI Series, Flat. (MPI #10)
 - 4) Sherwin-Williams A-100 Exterior Latex Flat, A6 Series.
 3. Top Coat(s): Exterior Acrylic, Low-Sheen.
 - a. Products:
 - 1) Benjamin Moore; UltraSpec EXT Exterior Latex Flat Finish N447.
 - 2) Dunn Edwards; EverShield Exterior Eggshell evsh40.
 - 3) PPG Paints Speedhide Exterior Latex Satin, 6-2045XI Series.
 - 4) Sherwin-Williams; A-100 Exterior Latex Satin, A82 series.
 4. Top Coat(s): Exterior Acrylic Enamel, Semi-Gloss.
 - a. Products:
 - 1) Benjamin Moore; UltraSpec EXT Exterior Latex Gloss Finish N449.
 - 2) Dunn Edwards; EVERSIELD Exterior Semi-Gloss Paint, EVSH50-1.
 - 3) PPG Paints Speedhide Exterior Latex Semi-Gloss, 6-900XI Series.
 - 4) Sherwin-Williams; A-100 Exterior Latex Gloss, A8 series.

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5. Top Coat(s): Exterior Industrial Acrylic Enamel, Semi-Gloss; for Ferrous and Other Metals.
 - a. Products:
 - 1) Benjamin Moore; Ultra Spec HP DTM Acrylic Semi-Gloss HP29.
 - 2) Dunn Edwards; UltraShield DTM Semi-Gloss.
 - 3) Pittsburgh Paints; 90-1210 Pitt-Tech Plus Int./Ext. Semi-Gloss.
 - 4) Sherwin-Williams; ProIndustrial Acrylic Semi-Gloss, B66-650.
 6. Top Coat(s): Exterior Urethane Enamel, Full-Glos; High Performance.
 - a. Products:
 - 1) Benjamin Moore; Corotech Aliphatic Acrylic Urethane Gloss V500.
 - 2) Dunn Edwards; Carboline Industrial - 134 WB Carbothane
 - 3) Pittsburgh Paints; Durethane Water-Based Urethane Gloss, 98-8200.
 - 4) Sherwin-Williams; Water-Based Acrolon 100 Polyurethane Gloss, B65-700 series.
- B. Ferrous Metals, Primed, Alkyd, 2 Coat:
1. Touch-up with rust-inhibitive primer recommended by top coat manufacturer.
 2. Semi-gloss: Two coats of alkyd enamel.

2.4 PRIMERS

- A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats; where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.
1. Alkali Resistant Water Based Primer.
 2. Anti-Corrosive Alkyd Primer for Metal.
 3. Alkyd Primer for Galvanized Metal.

2.5 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

3.1 EXAMINATION

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

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- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
- C. Test shop-applied primer for compatibility with subsequent cover materials.

3.2 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 repair existing paints or finishes that exhibit surface defects.
- D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.
- E. Seal surfaces that might cause bleed through or staining of topcoat.
- F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- G. Concrete:
 - 1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
- H. Masonry:
 - 1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
 - 2. Prepare surface as recommended by top coat manufacturer.
- I. Fiber Cement Siding: Remove dirt, dust and other foreign matter with a stiff fiber brush. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
- J. Ferrous Metal:
 - 1. Solvent clean according to SSPC-SP 1.
 - 2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.
 - 3. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.

3.3 APPLICATION

- A. Apply products in accordance with manufacturer's written instructions.
- 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.
- D. Sand wood and metal surfaces lightly between coats to achieve required finish.
- E. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- F. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.4 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection.
- B. Request Architect review and acceptance of first finished type of area, item or component for color, texture and workmanship.
- C. Use first acceptable location as project standard for each successive room or space.
- D. Obtain approval of each paint coat before application of successive coats. Failure to obtain approval between coats shall result in loss of credit for additional coats applied.
- E. At any time the Architect may obtain samples from the products in use at the work sites for analysis and verification of product compliance with the specifications.
- F. Corrective Measures: As required by the Architect at no cost to the Owner.

3.5 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.6 PROTECTION

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

3.7 SCHEDULE - PAINT SYSTEMS

- A. The following Painting Schedule shall be used for the work. If not identified within this schedule, refer to Finish Schedule on Drawings to locate specific surfaces to receive finishes specified.
- B. For surfaces not indicated above, submit for approval, paint schedules of the products of the above manufacturers, or other manufacturers for the various substrates as indicated on the drawings, or described in the specifications.

3.8 EXTERIOR PAINT SCHEDULE

- A. Ferrous Metals: Semi-Gloss.
 - 1. First Coat: Red Oxide Primer (unless shop primed).
 - 2. Two Coats: Alkyd semi-gloss enamel, 50%-60% on a 60 degree gloss meter.
- B. Galvanized Metal: Semi-Gloss.
 - 1. Etching: Etch galvanized metals if required by the selected manufacturer's written instructions.
 - 2. First Coat: Alkyd or Vinyl Primer.
 - 3. Two Coats: Alkyd Semi-Gloss.

END OF SECTION

SECTION 09 9123 - INTERIOR PAINTING

PART 1 GENERAL

1.1 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, including the following:
 - 1. Elevator pit ladders.
- 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. Items indicated to receive other finishes.
 - 3. Items indicated to remain unfinished.
 - 4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
 - 5. Floors, unless specifically indicated.
 - 6. Glass.
 - 7. Concealed pipes, ducts, and conduits.

1.2 RELATED REQUIREMENTS

- A. Section 05 5000 - Metal Fabrications: Shop-primed items.
- B. Section 09 2116 - Gypsum Board Assemblies: Joint treatment and finish level requirements. Primer requirements prior to texture finish material application.
- C. Section 09 9113 - Exterior Painting.
- D. Section 09 9300 - Staining and Transparent Finishing: Wood substrates.

1.3 DEFINITIONS

- A. Comply with ASTM D16 for interpretation of terms used in this section.
 - 1. Flat refers to lusterless or matte finish with a gloss range below 15% when measured at an 85-degree meter.

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2. Low-sheen Eggshell refers to low-sheen finish with a gloss range between 9% and 15% when measured at a 60-degree meter.
3. Semi-Gloss refers to medium-sheen finish with a gloss range between 35% and 70% when measured at a 60-degree meter.
4. Full-Gloss refers to high-sheen finish with a gloss range more than 70% when measured at a 60-degree meter.

1.4 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; 2016.
- C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.
- D. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).
- E. SSPC-SP 6 - Commercial Blast Cleaning; 2007.

1.5 SUBMITTALS

- A. See Section 01 3000 - 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. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
 3. Manufacturer's installation instructions and instructions for reducing, if applicable.
 4. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.
- C. Samples: Submit two paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
 1. Where sheen is specified, submit samples in only that sheen.
 2. Where sheen is not specified, submit each color in each sheen available.
- D. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, care and cleaning instructions,

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touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. Extra Paint and Finish Materials: 5 percent, but not less than 1 gallon or 1 case, as appropriate, of each material, finish and color applied; from the same product run, store where directed.
 - 2. Label each container with color in addition to the manufacturer's label.
 - 3. Deliver extra materials to Owner on, or before, Date of Substantial Completion.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum five years documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum five years experience and approved by manufacturer.

1.7 MOCK-UP

- A. See Section 01 4000 - Quality Requirements, for general requirements for mock-up.
- B. Provide panel, 10 feet long by 10 feet wide, illustrating paint color, texture, and finish.
- C. Accepted mock-up may remain as part of the work.

1.8 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 and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.
- D. Maintain containers in clean condition, free of foreign materials and residue.
- E. Remove rags and waste from storage areas daily.

1.9 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

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- 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 above the dew point, or to damp or wet surfaces.
- D. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.
- B. Paints:
 - 1. Benjamin Moore & Co: www.benjaminmoore.com.
 - 2. Dunn-Edwards: www.dunnedwards.com.
 - 3. PPG Paints: www.ppgpaints.com/#sle.
 - 4. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
- C. Primer Sealers: Same manufacturer as top coats.
- D. Substitutions: See Section 01 6000 - Product Requirements.

2.2 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. 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 paint material in quantity required to complete entire project's work from a single production run.
 - 4. 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:

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- a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
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. 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.

2.3 PAINT SYSTEMS - INTERIOR

- A. Interior Surfaces to be Painted, Unless Otherwise Indicated: Including gypsum board and shop primed steel.
 1. Two top coats and one coat primer.
 2. Top Coat(s): Institutional Low Odor/VOC Interior Latex.
 - a. Products:
 - 1) Benjamin Moore; Ultra Spec 500 Interior Eggshell Finish N538.
 - 2) Dunn Edwards; Spartazero 30, Interior Latex, SZRO30.
 - 3) Sherwin-Williams ProMar 200 Zero VOC Interior Latex, Eg-Shel B20-2600 series.
- B. Medium Duty Door/Trim: For surfaces subject to frequent contact by occupants, including metals:
 1. Medium duty applications include doors, door frames, railings, handrails, and guardrails.
 2. Two top coats and one coat primer.
 3. Top Coat(s): High Performance Architectural Interior Latex.
 - a. Products:
 - 1) Benjamin Moore; Corotech Pre-Catalyzed Waterborne Epoxy Semi-Gloss V341.
 - 2) Dunn Edwards; Rust-Oleum S60 WaterBase Epoxy.
 - 3) PPG Paints Pure Performance Interior Latex, 9-510XI Series, Semi-Gloss. (MPI #141)
 - 4) Sherwin-Williams Pro Industrial Pre-Catalyzed Waterbased Epoxy, Semi-Gloss (K46 series).
 4. Top Coat(s): Interior Light Industrial Coating, Water Based.
 - a. Products:
 - 1) Benjamin Moore; UltraSpec HP DTM Acrylic Semi-Gloss HP29.
 - 2) Dunn Edwards; UltraShield Acrylic DTM SemiGloss, ULDM50.
 - 3) PPG Paints Pitt-Tech Plus WB DTM Industrial Enamel. 4216 HP Series, Semi-Gloss. (MPI #153)

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- 4) Sherwin-Williams Pro Industrial Acrylic Coating, Semi-Gloss, B66-650 series.
- C. Medium Duty Vertical and Overhead: Including gypsum board, plaster, concrete, concrete masonry units, uncoated steel, shop primed steel, galvanized steel, and aluminum.
1. Two top coats and one coat primer.
 2. Top Coat(s): High Performance Architectural Interior Latex.
 - a. Products:
 - 1) Benjamin Moore; Corotech Pre-Catalyzed Waterborne Epoxy Semi-Gloss V341.
 - 2) Dunn Edwards; Rust-Oleum S60/62 WaterBase Epoxy
 - 3) Sherwin-Williams Pro Industrial Pre-Catalyzed Waterbased Epoxy, Semi-Gloss, K46-150 series.
 3. Top Coat(s): Institutional Low Odor/VOC Interior Latex.
 - a. Products:
 - 1) Benjamin Moore; UltraSpec 500 Interior Semi-Gloss Finish N539.
 - 2) Dunn Edwards; Suprema 50-1.
 - 3) PPG Paints Pure Performance Interior Latex, 9-510XI Series, Semi-Gloss. (MPI #147)
 - 4) Sherwin-Williams ProMar 200 Zero VOC Interior Latex, Semi-Gloss.
- D. Concrete Floors to be Painted.
1. Two top coats and one coat primer.
 2. Top Coat(s): Epoxy Floor Paint, Super Heavy Duty.
 - a. Products:
 - 1) Tennant Coatings; Eco-Shield High Wear Epoxy: www.tennantcoatings.com.
 3. Top Coat(s): Epoxy Floor Paint, Standard Duty.
 - a. Products:
 - 1) Diamond Vogel; Flor-Cote Durable Gloss Polyurethane Enamel: www.diamondvogel.com
- E. Transparent Finish on Concrete Floors.
1. 2 coats sealer.
 2. Sealer: Water Based Sealer for Concrete Floors.
 - a. Products:
 - 1) Curecrete Concrete Solutions; Ashford Formula: www.ashfordformula.com.
 - 2) Laticrete International, Inc.; L&M Seal Hard: www.laticrete.com.
 3. Sealer Sheen:
 - a. Eggshell: MPI gloss level 3; use this sheen at all locations.
- F. Ferrous Metals, Primed, Alkyd, 2 Coat:
1. Touch-up with alkyd primer.

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2. Semi-gloss: Two coats of alkyd enamel.

2.4 PRIMERS

- A. Primers: As recommended by manufacturer of top coats.
 1. Interior/Exterior Latex Block Filler.
 - a. Products:
 - 1) Benjamin Moore; Ultra Spec 500 Latex Primer / Sealer N534.
 - 2) Approved substantial equivalent product by top coat manufacturer.

2.5 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

3.1 EXAMINATION

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- C. Test shop-applied primer for compatibility with subsequent cover materials.

3.2 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 repair existing paints or finishes that exhibit surface defects.
- 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.

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- F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- G. Concrete:
 - 1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
- H. Masonry:
 - 1. Remove efflorescence and chalk. Do not coat surfaces if moisture content, alkalinity of surfaces, or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
 - 2. Prepare surface as recommended by top coat manufacturer.
- I. Concrete Floors and Traffic Surfaces: Remove contamination, acid etch and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.
- J. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.
- K. Plaster: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.
- L. Aluminum: Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
- M. Galvanized Surfaces:
- N. Ferrous Metal:
 - 1. Solvent clean according to SSPC-SP 1.
 - 2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
 - 3. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.
- O. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.
- P. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with tinted primer.

3.3 APPLICATION

- A. Apply products in accordance with manufacturer's written instructions.
- 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. Sand wood and metal surfaces lightly between coats to achieve required finish.
- E. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- F. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.4 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection.
- B. Request Architect review and approval of first finished room for color, texture and workmanship.
- C. Use first acceptable room as project standard for each successive room or space.
- D. Obtain approval of each paint coat before application of successive coats. Failure to obtain approval between coats shall result in loss of credit for additional coats applied.
- E. At any time the Architect may obtain samples from the products in use at the work sites for analysis and verification of product compliance with the specifications.
- F. Corrective Measures: As required by the Architect at no cost to the Owner.

3.5 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.6 PROTECTION

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

3.7 SCHEDULE - PAINT SYSTEMS

- A. The following Painting Schedule shall be used for the work. Unless otherwise specified, all finishes shall be four (4) coat systems, consisting of one (1) sealer or prime coat before gypsum texture, one (1) coat sealer or prime coat after gypsum texture, and two (2) finish coats. Select same manufacturer's primer and finish-coats product for each finish specified. If not identified within this schedule, refer to Finish Schedule on Drawings to locate specific surfaces to receive finishes specified.
- B. For surfaces not indicated above, submit for approval, paint schedules of the products of the above manufacturers, or other manufacturers for the various substrates as indicated on the drawings, or described in the specifications.

3.8 INTERIOR PAINTING SCHEDULE

- A. Gypsum Board: Satin.
 - 1. Location: All gypsum board walls and ceilings except those noted below
 - 2. Two Coats: Vinyl Acrylic Latex Primer. One coat prior to gypsum texture, and one coat following gypsum texture.
 - 3. Two Coats: Satin Acrylic Enamel.
- B. Gypsum Board: Semi-Gloss.
 - 1. Location: Janitor Rooms.
 - 2. Two Coats: Vinyl Acrylic Latex Primer, or waterborne Epoxy Primer. One coat prior to gypsum texture, and one coat following gypsum texture.
 - 3. Two Coats: Interior Semi-Gloss Acrylic Enamel.
- C. Ferrous Metals: Gloss.
 - 1. First Coat: Red Oxide Primer, or Latex Metal Primer (unless shop primed).
 - 2. Two Coats: Latex or Alkyd gloss enamel, 50%-60% on a 60 degree gloss meter.
- D. Galvanized Metals: Semi-Gloss.
 - 1. Etching: Etch galvanized metals if required by the selected manufacturer's written instructions.
 - 2. First Coat: Acrylic Primer.
 - 3. Two Coats: Latex or Alkyd Semi-Gloss Enamel.
- E. Plumbing, Heating, Ventilating and Electrical Items: Semi-Gloss.
 - 1. Location: Exposed unpainted, prime coat painted, and insulated items, hangers, straps, junction boxes, ducts, etc., of plumbing, heating, air conditioning, and ventilating and electrical work shall be painted in finished spaces where exposed.

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2. Insulated or Wrapped Work:
 - a. First Coat: Aluminum size to shrink canvas.
 - b. Two Coats: Semi-Gloss Latex Enamel.
 3. Non-Insulated Work:
 - a. Two Coats: Semi-Gloss Latex Enamel.
- F. Concrete Floor Slab Sealer.
1. Two Coats of Sealer: Penetrating liquid floor treatment of waterborne solution of inorganic silicate or silicate materials and proprietary components; odorless; colorless; that penetrates; hardens and densifies concrete surfaces.
- G. Concrete Floor Epoxy Paint
1. One coat of paint at a rate of 32-35 sq.ft./gal. If second coat is needed, apply while the first coat is still tacky. Allow coating to cure 24 hours at 75 degrees F and 50% relative humidity.

END OF SECTION

SECTION 10 1100 - VISUAL DISPLAY UNITS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Porcelain enamel steel markerboards.
- B. Tackboards.

1.2 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Blocking and supports.
- B. Section 09 2116 - Gypsum Board Assemblies: Concealed supports in metal stud walls.

1.3 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's data on porcelain enamel steel markerboard, tackboard, and accessories.
- C. Samples: Color charts for selection of color and texture of porcelain enamel steel markerboard, tackboard, and trim.
- D. Maintenance Data: Include data on regular cleaning, stain removal.

1.4 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Provide five year warranty for markerboard to include warranty against discoloration due to cleaning, crazing or cracking, and staining.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. See Finish Legend on Drawings.

2.2 VISUAL DISPLAY UNITS

- A. Porcelain Enamel Steel Markerboards:
 - 1. Color: White.
 - 2. Size: As indicated on drawings.
 - 3. Frame: Extruded aluminum, with concealed fasteners.
 - 4. Frame Finish: Anodized, natural.
 - 5. Accessories: Provide marker tray, map rail, and (2) flag holders.
- B. Tackboards: Composition cork.
 - 1. Cork Thickness: 1/4 inch.
 - 2. Color: As selected from manufacturer's full range (not to be natural cork).
 - 3. Size: As indicated on drawings.
 - 4. Frame Finish: Anodized, natural.

2.3 MATERIALS

2.4 ACCESSORIES

- A. Map Rail: Extruded aluminum, manufacturer's standard profile, with cork insert and runners for accessories; 1 inch wide overall, full width of frame.
- B. Mounting Brackets: Concealed.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that internal wall blocking is ready to receive work and positioning dimensions are as indicated on shop drawings.

3.2 INSTALLATION

- A. Install boards in accordance with manufacturer's instructions.
- B. Secure units level and plumb.

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3.3 CLEANING

- A. Clean board surfaces in accordance with manufacturer's instructions.

END OF SECTION

SECTION 10 1400 - SIGNAGE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Room and door signs.
- B. Building identification signs.

1.2 RELATED REQUIREMENTS

- A. Section 08 8000 - Glazing: Substrate for room and door signage.
- B. Section 09 2116 - Gypsum Board Assemblies: Substrate for room and door signage.
- C. Section 10 1500 - Video Display Systems: Electronic Marquee Sign.

1.3 REFERENCE STANDARDS

- A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.
- B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- C. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.4 SUBMITTALS

- A. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.
- B. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
 - 1. When room numbers to appear on signs differ from those on drawings, include the drawing room number on schedule.
 - 2. When content of signs is indicated to be determined later, request such information from Owner through Architect at least 2 months prior to start of fabrication; upon request, submit preliminary schedule.
 - 3. Submit for approval by Owner through Architect prior to fabrication.

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- C. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.
- D. Manufacturer's Qualification Statement.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Package signs as required to prevent damage before installation.
- B. Package room and door signs in sequential order of installation, labeled by floor or building.
- C. Store tape adhesive at normal room temperature.

1.7 FIELD CONDITIONS

- A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.
- B. Maintain this minimum temperature during and after installation of signs.

PART 2 PRODUCTS

2.1 SIGNAGE APPLICATIONS

- A. Accessibility Compliance: Signs are required to comply with ADA Standards and ICC A117.1 and applicable building codes, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.
- B. Room and Door Signs: Provide a sign for every doorway, whether it has a door or not, not including corridors, lobbies, and similar open areas.
 - 1. Sign Type: Flat signs with applied character panel media as specified.
 - 2. Provide "tactile" signage, with letters raised minimum 1/32 inch and Grade II braille.
 - 3. Character Height: 1 inch.
 - 4. Sign Height: 2 inches, unless otherwise indicated.
 - 5. Office Doors: Identify with room numbers to be determined later, not the numbers indicated on drawings; in addition, provide "window" section for replaceable occupant name.

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6. Rest Rooms: Identify with pictograms, the names "MEN", "WOMEN", "BOYS", "GIRLS" or "RESTROOM", and braille.
7. Exit Doors and Stairs: Identify doors at exit passageways, exit discharge and exit stairways with flat tactile signs; 4 inches high by 6 inches wide, minimum.

C. Building Identification Signs:

1. Use individual metal letters.
2. Mount on exterior or interior wall in location indicated on drawings.
3. Height: 18 inches, unless otherwise indicated on the drawings.

2.2 SIGN TYPES

A. Flat Signs: Signage media without frame.

1. Edges: Square.
2. Corners: Square.
3. Wall Mounting of One-Sided Signs: Tape adhesive.

B. Color and Font: Unless otherwise indicated:

1. Character Font: Helvetica, Arial, or other sans serif font.
2. Character Case: Upper case only.
3. Background Color: As selected by Architect from manufacturer's standard options.
4. Character Color: Contrasting color.

2.3 TACTILE SIGNAGE MEDIA

A. Engraved Panels: Laminated colored plastic; engraved through face to expose core as background color:

1. Total Thickness: 1/16 inch.

B. Applied Character Panels: Acrylic plastic base, with applied acrylic plastic letters and braille.

1. Total Thickness: 1/8 inch.
2. Letter Thickness: 1/8 inch.
3. Letter Edges: Square.

2.4 DIMENSIONAL LETTERS

A. Metal Letters:

1. Metal: Aluminum casting.

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2. Finish: Dark bronze anodized.
3. Mounting: Concealed screws.

2.5 ACCESSORIES

- A. Concealed Screws: Stainless steel, galvanized steel, chrome plated, or other non-corroding metal.
- B. Tape Adhesive: Double sided tape, permanent adhesive.

PART 3 EXECUTION

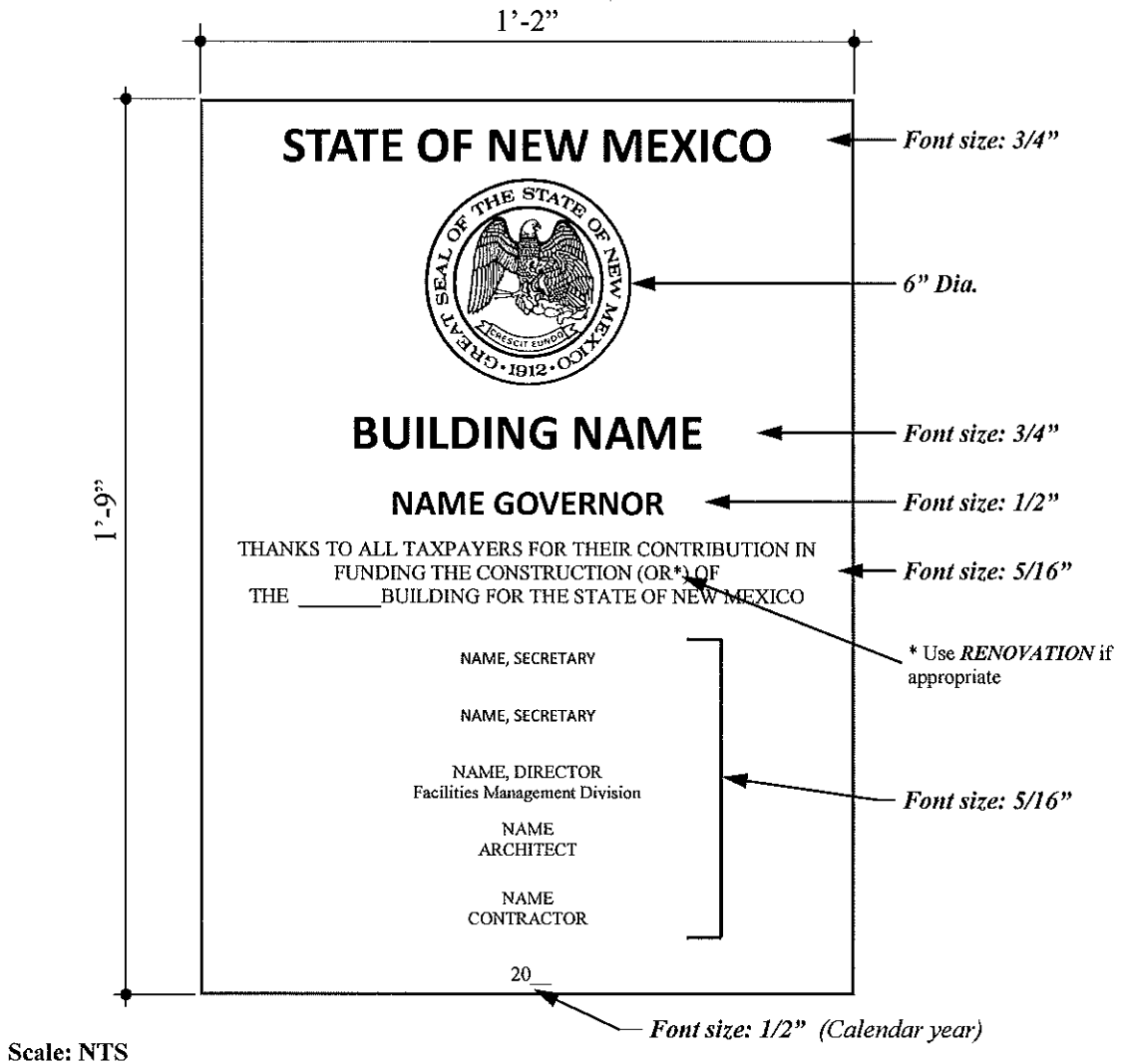
3.1 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install neatly, with horizontal edges level.
- C. Locate signs and mount at heights indicated on drawings and in accordance with ADA Standards and ICC A117.1.
- D. Where sign placement requires attachment to glass, attach a blank sign panel of the same color and size to the opposite side of the glass to conceal tape adhesive.
- E. Protect from damage until Date of Substantial Completion; repair or replace damaged items.

END OF SECTION



Plaque material to be cast aluminum, background to be stipple texture with sprayed enamel finish. Letters and Line-work to be raised 1/8" above background and stain polished. Letter style to be HELVETICA medium. Finished plaque to receive 2 coats of clear acrylic lacquer. Mounting devices shall be of a concealed type and style approved by the A/E.

STATE OF NEW MEXICO BUILDING PLAQUE REQUIRED; YES NO

SECTION 10 2113.19 - PLASTIC TOILET COMPARTMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Solid plastic toilet compartments.
- B. Urinal screens.

1.2 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Blocking and supports.
- B. Section 10 2800 - Toilet, Bath, and Laundry Accessories.

1.3 REFERENCE STANDARDS

- A. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth; 2019.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the work with placement of support framing and anchors in walls and ceilings.

1.5 SUBMITTALS

- A. Product Data: Provide data on panel construction, hardware, and accessories.
- B. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall supports, door swings.
- C. Samples: Submit two samples of partition panels, 6 by 6 inch in size illustrating panel finish, color, and sheen.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Solid Plastic Toilet Compartments:
 - 1. All American Metal Corp - AAMCO: www.allamericanmetal.com/#sle.

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2. ASI Global Partitions: www.asi-globalpartitions.com/#sle.
3. Partition Systems International of South Carolina: www.psisc.com/#sle.
4. Substitutions: See Section 01 6000 - Product Requirements.

2.2 PLASTIC TOILET COMPARTMENTS

- A. Solid Plastic Toilet Compartments: Factory fabricated doors, pilasters, and divider panels made of solid molded high density polyethylene (HDPE), tested in accordance with NFPA 286; floor-mounted headrail-braced.
 1. Color: Single color as selected.
- B. Doors:
 1. Thickness: 1 inch.
 2. Width: 24 inch.
 3. Width for ambulatory stall: 32 inch, out-swinging.
 4. Width for accessible stall: 36 inch, out-swinging.
 5. Height: 55 inch.
- C. Panels:
 1. Thickness: 1 inch.
 2. Height: 55 inch.
- D. Pilasters:
 1. Thickness: 1 inch.
 2. Width: As required to fit space; minimum 3 inch.
- E. Screens: Without doors; to match compartments; mounted to wall with continuous panel brackets vertical support/bracing floor to structure above.

2.3 ACCESSORIES

- A. Pilaster Shoes: Stainless steel, satin finish, 3 inches high; concealing floor fastenings.
 1. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster.
- B. Head Rails: Extruded aluminum, anti-grip profile.
 1. Size: Manufacturer's standard size.
- C. Wall and Pilaster Brackets: Stainless steel; continuous type.
- D. Attachments, Screws, and Bolts: Stainless steel, tamper proof type.

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1. For attaching panels and pilasters to brackets: Through-bolts and nuts; tamper proof.
- E. Hinges: Stainless steel, manufacturer's standard finish.
 1. Continuous-type hinge, self closing.
- F. Door Hardware: Stainless steel, manufacturer's standard finish.
 1. Door Latch: Slide type with exterior emergency access feature.
 2. Door Strike and Keeper with Rubber Bumper: Mount on pilaster in alignment with door latch.
 3. Provide door pull for outswinging doors.
- G. Coat Hook with Rubber Bumper: One per compartment, mounted on door.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify correct spacing of and between plumbing fixtures.
- C. Verify correct location of built-in framing, anchorage, and bracing.

3.2 INSTALLATION

- A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions.
- B. Maintain 3/8 inch to 1/2 inch space between wall and panels and between wall and end pilasters.
- C. Attach panel brackets securely to walls using anchor devices.
- D. Attach panels and pilasters to brackets. Locate head rail joints at pilaster center lines.

3.3 TOLERANCES

- A. Maximum Variation From True Position: 1/4 inch.
- B. Maximum Variation From Plumb: 1/8 inch.

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3.4 ADJUSTING

- A. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch.
- B. Adjust hinges to position doors in partial opening position when unlatched. Return out-swinging doors to closed position.
- C. Adjust adjacent components for consistency of line or plane.

END OF SECTION

SECTION 10 2239 - FOLDING PANEL PARTITIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Top-supported folding panel partitions, horizontal opening.

1.2 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Wood blocking and track support shimming.

1.3 REFERENCE STANDARDS

- A. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009.
- B. ASTM E413 - Classification for Rating Sound Insulation; 2010.
- C. ASTM E557 - Standard Guide for Architectural Design and Installation Practices for Sound Isolation between Spaces Separated by Operable Partitions; 2012.
- D. ASTM F793/F793M - Standard Classification of Wall Coverings by Use Characteristics; 2015.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on partition materials, operation, hardware and accessories, electric operating components, track switching components, and colors and finishes available.
- C. Shop Drawings: Indicate opening sizes, track layout, details of track and required supports, static and dynamic loads, location and details of pass door and frame, adjacent construction and finish trim, and stacking depth.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified this section with minimum five years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until installation.

1.7 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within five year period after Date of Substantial Completion.
- C. Provide two year manufacturer warranty against defects in material and workmanship, excluding abuse.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Folding Panel Partitions - Horizontal Opening:
 - 1. Hufcor, Inc; Series 600: www.hufcor.com/#sle.

2.2 FOLDING PANEL PARTITIONS - HORIZONTAL OPENING

- A. Folding Panel Partitions: Side opening; continuous hinged panels; side stacking; motor operated.
- B. Panel Construction:
 - 1. Frame: 16 gauge, 0.0598 inch thick formed sheet steel frame top, bottom, jambs, and intermediates; welded construction, with acoustical insulation fill.
 - 2. Panel Substrate Facing: Steel sheet, manufacturer's standard thickness.
 - 3. Panel Properties:
 - a. Thickness With Finish: 4 inches, nominal.
 - b. Width: Up to 48 inches (1219 mm).
 - c. Weight: 7.8-10.9 lb/sq ft.
- C. Panel Finishes:
 - 1. Facing: Vinyl coated fabric.
- D. Panel Seals:
 - 1. Panel to Panel Seals: Grooved and gasketed astragals, with continuous flexible ribbed vinyl seal fitted to panel edge construction; color to match panel finish.

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2. Acoustic Seals: Flexible acoustic seals at jambs, meeting mullions, ceilings, retractable floor seals, and above track to structure acoustic seal.

E. Suspension System:

1. Track: Formed steel; 1-1/4 by 1-1/4 inch size; thickness and profile designed to support loads, steel sub-channel and track connectors, and track switches.
2. Carriers: Steel, ball bearing wheels on trolley carrier at top of every second panel, sized to carry imposed loads, with threaded pendant bolt for vertical adjustment.

F. Performance:

1. Acoustic Performance:
 - a. Sound Transmission Class (STC): 48 to 52 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90, on panel size of 100 sq ft.
2. Installed partition system track capable of supporting imposed loads, with maximum deflection of 1/360 of span.

G. Operation:

1. Electric Operator: 12 inches per second traveling speed; adjustable friction clutch brake actuated by solenoid controlled motor starter; enclosed limit switch; enclosed magnetic reversing starter.
2. Control Station: Two standard keyed, three button constant pressure type; 24 volt circuit; recess mounted.
 - a. Key switch prepared for mortise lock cylinder.
 - b. Key switches alike.
3. Safety Features:
 - a. Limit Switches: Automatic type, at both extremes of travel, to prevent over-travel.
 - b. Emergency Release: Mechanism to disengage motor drive system and permit manual operation.
 - c. Pocket Door Interlock: Mechanism to prevent operation of panels unless storage pocket doors are fully open.
4. Electrical Requirements:

H. Accessories:

1. Pocket Enclosures: Door, frame, and trim to match adjacent walls.

2.3 MATERIALS

- A. Vinyl Coated Fabric: ASTM F793, Category VI, polyvinyl fluoride (PVC) finish for washability and improved flame retardance; color as selected by Architect from manufacturer's standard range.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify track supports are laterally braced and will permit track to be level within 1/4 inch of required position and parallel to the floor surface.

3.2 INSTALLATION

- A. Install partition in accordance with manufacturer's instructions and ASTM E557.
- B. Fit and align partition assembly and pocket doors level and plumb.
- C. Lubricate moving components.
- D. Install acoustic sealant to achieve required acoustic performance.
- E. Coordinate electrical connections.

3.3 ADJUSTING

- A. Adjust partition assembly to provide smooth operation from stacked to full open position. Do not over-compress acoustic seals.
- B. Visually inspect partition in full extended position for light leaks to identify a potential acoustical leak.
- C. Adjust partition assembly to achieve lightproof seal.

3.4 CLEANING

- A. Clean finish surfaces and partition accessories.

3.5 CLOSEOUT ACTIVITIES

- A. Demonstrate operation of partition and identify potential operational problems.

END OF SECTION

SECTION 10 2600 - WALL AND DOOR PROTECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Corner guards.

1.2 RELATED REQUIREMENTS

- A. Section 09 2116 - Gypsum Board Assemblies: Placement of supports in stud wall construction.

1.3 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.

1.4 SUBMITTALS

- A. Product Data: Indicate physical dimensions, features, anchorage details, and rough-in measurements.
- B. Samples: Submit samples illustrating component design, configurations, joinery, color and finish.
 - 1. Submit two sections of corner guards, 24 inches long.
- C. Manufacturer's Instructions: Indicate special procedures, perimeter conditions requiring special attention.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver wall and door protection items in original, undamaged protective packaging. Label items to designate installation locations.
- B. Store products in either horizontal or vertical position, in compliance with manufacturer's instructions.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Corner Guards:

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1. As indicated on Finish Legend in drawings.

2.2 PRODUCT TYPES

A. Corner Guards - Surface Mounted (CG-X):

1. Material: Type 304 stainless steel, No. 4 finish, 16 gauge, 0.0625 inch thick.
2. Surface Burning Characteristics: Provide assemblies with flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
3. Width of Wings: As indicated on Finish Legend.
4. Corner: Radiused, 1/4 inch, minimum.
5. Color: As indicated.
6. Length: One piece, as indicated on Finish Legend.

B. Adhesives and Primers: As recommended by manufacturer.

1. Use adhesives and sealants that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - a. Gypsum Board and Panel Adhesives: 50 g/L.
 - b. Multipurpose Construction Adhesives: 70 g/L.
 - c. Contact Adhesive: 80 g/L.

2.3 FABRICATION

- A. Fabricate components with tight joints, corners and seams.

2.4 SOURCE QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Provide wall and door protection systems of each type from a single source and manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that rough openings, concealed blocking, and anchors are correctly sized and located.

3.2 INSTALLATION

- A. Install components in accordance with manufacturer's instructions, level and plumb, secured rigidly in position to supporting construction.
- B. Position corner guards as indicated.

3.3 TOLERANCES

- A. Maximum Variation From Required Height: 1/4 inch.
- B. Maximum Variation From Level or Plane For Visible Length: 1/4 inch.

3.4 CLEANING

- A. Clean wall and door protection items of excess adhesive, dust, dirt, and other contaminants.

END OF SECTION

SECTION 10 2800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Commercial toilet accessories.
- B. Diaper changing stations.
- C. Utility room accessories.
- D. Grab bars.

1.2 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2015.
- C. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- D. ASTM C1036 - Standard Specification for Flat Glass; 2011.
- E. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2008 (Reapproved 2013).
- F. ASTM F2285 - Standard Consumer Safety Performance Specification for Diaper Changing Tables for Commercial Use; 2004 (Reapproved 2016).

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Commercial Toilet, Shower, and Bath Accessories:
 - 1. American Specialties, Inc: www.americanspecialties.com.
 - 2. Bobrick Washroom Equipment, Inc.: www.bobrick.com.
 - 3. Bradley Corporation: www.bradleycorp.com.
- B. Electric Hand/Hair Dryers:
 - 1. Excel Dryer: www.exceldryer.com.
 - 2. Frost Products Limited: www.frostproductsltd.com.
 - 3. World Dryer Corporation: www.worlddryer.com.
- C. Diaper Changing Stations:
 - 1. American Specialties, Inc: www.americanspecialties.com/#sle.
 - 2. Bradley Corporation: www.bradleycorp.com.
 - 3. Koala Kare Products: www.koalabear.com.

2.2 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.
- B. Keys: Provide two keys for each accessory to Owner; master key lockable accessories.
- C. Stainless Steel Sheet: ASTM A666, Type 304.
- D. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.
- E. Mirror Glass: Annealed float glass, ASTM C1036 Type I, Class 1, Quality Q2, with silvering, protective and physical characteristics complying with ASTM C1503.
- F. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.
- G. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.3 FINISHES

- A. Stainless Steel: Satin finish, unless otherwise noted.

2.4 COMMERCIAL TOILET ACCESSORIES

- A. Combination Toilet Paper/Seat Cover Dispenser with Napkin Disposal: Double roll; Recessed flush with wall, stainless steel; seamless wall flanges, continuous piano hinges.
- B. Combination Towel Dispenser/Waste Receptacle: Recessed flush with wall, stainless steel; seamless wall flanges, continuous piano hinges, tumbler locks on upper and lower doors.
 - 1. Waste receptacle liner: Reusable, heavy-duty vinyl.
 - 2. Towel dispenser capacity: 600 C-fold.
 - 3. Waste receptacle capacity: 6 gallons.
 - 4. Products:
 - a. Bobrick Washroom Equipment, Inc.; B-3803: www.bobrick.com.
- C. Soap Dispenser: Liquid soap dispenser, wall-mounted, surface, with stainless steel cover and vertical stainless steel tank and working parts; push type soap valve, check valve, and window gage refill indicator, tumbler lock.
 - 1. Minimum Capacity: 40 ounces.
 - 2. Products:
 - a. Bradley Corporation; Model #6562: www.bradleycorp.com.
- D. Mirrors: Stainless steel framed, 1/4 inch thick annealed float glass; ASTM C1036.
 - 1. Annealed Float Glass: Silvering, protective and physical characteristics in compliance with ASTM C1503.
 - 2. Size: As indicated on Drawings.
 - 3. Products:
 - a. Bobrick Washroom Equipment, Inc.; B-165 Series: www.bobrick.com.
- E. Grab Bars: Stainless steel, textured surface.
 - 1. Standard Duty Grab Bars:
 - a. Push/Pull Point Load: 250 pound-force, minimum.
 - b. Dimensions: 1-1/4 inch outside diameter, minimum 0.05 inch wall thickness, exposed flange mounting, 1-1/2 inch clearance between wall and inside of grab bar.
 - c. Length and Configuration: As indicated on drawings.
 - d. Products:
 - 1) Bobrick Washroom Equipment, Inc.; B-6806 Series: www.bobrick.com.

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- F. Combination Sanitary Napkin/Tampon Dispenser with Disposal: Stainless steel, surface-mounted.
 - 1. Door: Seamless 0.05 inch door with returned edges and tumbler lock.
 - 2. Cabinet: Fully welded, 0.03 inch thick sheet.
 - 3. Identify dispensers slots without using brand names.
 - 4. Minimum capacity: 15 napkins and 20 tampons.

- G. Sanitary Napkin Disposal Unit: Stainless steel, surface-mounted, self-closing door, locking bottom panel with full-length stainless steel piano-type hinge, removable receptacle.

2.5 DIAPER CHANGING STATIONS

- A. Diaper Changing Station: Wall-mounted folding diaper changing station for use in commercial toilet facilities, meeting or exceeding ASTM F2285.
 - 1. Material: Polyethylene.
 - 2. Mounting: Surface.
 - 3. Color: As selected.
 - 4. Minimum Rated Load: 250 pounds.

2.6 UTILITY ROOM ACCESSORIES

- A. Combination Utility Shelf/Mop and Broom Holder: 0.05 inch thick stainless steel, Type 304, with 1/2 inch returned edges, 0.06 inch steel wall brackets.
 - 1. Hooks: Three, 0.06 inch stainless steel rag hooks at shelf front.
 - 2. Mop/broom holders: Three spring-loaded rubber cam holders at shelf front.
 - 3. Length: Manufacturer's standard length for number of holders/hooks.
 - 4. Products:
 - a. American Specialties, Inc; 1308-3: www.americanspecialties.com.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify exact location of accessories for installation.

3.2 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.

3.3 PROTECTION

- A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION

SECTION 10 4400 - FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Fire extinguishers.
- B. Fire extinguisher cabinets.
- C. Accessories.
- D. Rapid Entry Box.

1.2 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Wood blocking product and execution requirements.

1.3 REFERENCE STANDARDS

- A. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2013a.
- B. NFPA 10 - Standard for Portable Fire Extinguishers; 2013.
- C. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide extinguisher operational features and color and finish.
- C. Shop Drawings: Indicate cabinet physical dimensions and rough-in measurements for recessed cabinets.
- D. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

1.5 FIELD CONDITIONS

- A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Fire Extinguishers:
 - 1. Ansul, a Tyco Business: www.ansul.com.
 - 2. Larsen's Manufacturing Co: www.larsensmfg.com.
 - 3. Nystrom, Inc: www.nystrom.com/sle.
 - 4. Pyro-Chem, a Tyco Business: www.pyrochem.com.

- B. Fire Extinguisher Cabinets and Accessories:
 - 1. Activar Construction Products Group, Inc. - JL Industries: www.activarcpg.com/#sle.
 - 2. Larsen's Manufacturing Co: www.larsensmfg.com.
 - 3. Nystrom, Inc: www.nystrom.com/sle.

2.2 FIRE EXTINGUISHERS

- A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
 - 1. Provide extinguishers labeled by UL (DIR) for purpose specified and as indicated.

- B. Multipurpose Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gauge.
 - 1. Class: A:B:C type.
 - 2. Size: 10 pound.
 - 3. Finish: Baked polyester powder coat, color as selected.
 - 4. Temperature range: Minus 40 degrees F to 120 degrees F.

- C. Wet Chemical Type Fire Extinguishers: Stainless steel tank, with pressure gage.
 - 1. Class: K type.
 - 2. Size: 1.6 gallons.
 - 3. Finish: Polished stainless steel.
 - 4. Temperature range: Minus 20 degrees F to 120 degrees F.

2.3 FIRE EXTINGUISHER CABINETS

- A. Fire Rating: Listed and labeled in accordance with ASTM E814 requirements for fire resistance rating of walls where being installed.

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- B. Cabinet Construction: Non-fire rated.
 - 1. Formed galvanized steel sheet; 0.036 inch thick base metal.
- C. Fire Rated Cabinet Construction: One-hour fire rated.
 - 1. Steel; double wall or outer and inner boxes with 5/8 inch thick fire barrier material.
- D. Cabinet Configuration: Semi-recessed type.
 - 1. Size to accommodate accessories.
- E. Door: 0.036 inch metal thickness, reinforced for flatness and rigidity with nylon catch. Hinge doors for 180 degree opening with two butt hinges.
- F. Door Glazing: Tempered glass, clear, 1/8 inch thick, and set in resilient channel glazing gasket.
- G. Finish of Cabinet Exterior Trim and Door: Baked enamel, color as selected.
- H. Finish of Cabinet Interior: White colored enamel.

2.4 ACCESSORIES

- A. Extinguisher Brackets: Formed steel, chrome-plated.
- B. Cabinet Signage: FIRE EXTINGUISHER.

2.5 RAPID ENTRY BOX

- A. Description: Provide a Rapid Entry Box, as approved by the Fire Department, from a single source manufacturer. Locate near the front entry per authority having jurisdiction, or by Architect.
- B. Basis-of-design Product: Knox Company; Rapid Entry Box, Model 3200 series with hinged door: www.knoxbox.com.
 - 1. Body Size: 4 inch high x 5 inch wide x 3-3/4 inch deep.
 - 2. Mounting: Recessed mounting with flange: 7 inch x 7 inch.
 - 3. Lock: Double-action rotating tumblers and hardened steel pins accessed by biased cut key.
 - 4. Finish: Dark Bronze.
 - 5. Description: 1/4 inch solid steel housing, 1/2 inch steel door with interior gasket seal and stainless steel door hinge. U.L. Listed box and lock. 1/8 inch stainless steel dust cover over lock with tamper seal mounting capability.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify rough openings for cabinet are correctly sized and located.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Secure rigidly in place.
- C. Place extinguishers in cabinets and on wall brackets.

END OF SECTION

SECTION 10 7316.13 - METAL CANOPIES

PART 1 GENERAL

1.1 SECTION INCLUDES

1.2 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete footings.

1.3 REFERENCE STANDARDS

- A. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges; 2016.
- B. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- D. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2014.
- E. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
- F. ASTM A572/A572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel; 2015.
- G. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process; 2010 (Reapproved 2015).
- H. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions; 2015a.
- I. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2021).

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Submit product data sheets, including material descriptions and finishes, and preparation instructions and recommendations.
- C. Shop Drawings: Prior to commencement of fabrication, submit detailed shop drawings, showing profiles, sections of components, finishes, and fastening details.

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- D. Design Data: Submit comprehensive structural analysis of design for the specified loads. Stamp and sign calculations by professional engineer.
- E. Designer's Qualification Statement.
- F. Manufacturer's Qualification Statement.
- G. Erector's Qualification Statement.
- H. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.5 QUALITY ASSURANCE

- A. Designer Qualifications: Perform design under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.
 - 1. Comply with applicable code for submission of design calculations and reviewed shop and erection drawings as required for acquiring permits.
 - 2. Cooperate with regulatory agency or authorities having jurisdiction (AHJ), and provide data as requested.
- B. Perform steel work in accordance with AISC 303.
- C. Manufacturer Qualifications: Company specializing in the manufacture of products similar to those required for this project.
 - 1. Not less than five years of documented experience.
- D. Erector Qualifications: Company specializing in performing the work of this section.
 - 1. Not less than five years of documented experience and approved by canopy manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to project site ready for erection.
- B. Package using methods that prevent damage during shipping and storage on site.
- C. Store materials under cover and elevated above grade.

1.7 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Metal Canopies: Correct defective work within a ten year period after Date of Substantial Completion.

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- C. Steel Roof Finish Warranty: Provide manufacturer's thirty year warranty under a separate roof manufacturer's warranty.
- D. Finish Warranty: Provide manufacturer's ten year warranty on factory finish against cracking, peeling, and blistering.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Metal Canopies:
 - 1. Classic Recreation Systems, Inc.; Custom Marana Model: www.shadesun.com.

2.2 METAL CANOPIES

- A. Shop Fabricated Metal Canopy
- B. Performance Requirements:
 - 1. Design and fabricate metal canopy system to resist wind, snow, live, and seismic loads without failure, damage, or permanent deflection in accordance with ASCE 7:
 - a. Loads: In compliance with local building codes.
 - 2. Thermal Movement: Design canopy system to accommodate thermal movement caused by ambient temperature range of 120 degrees F and surface temperature range of 180 degrees F without buckling, failure of joint seals, undue stress on fasteners or other detrimental effects on assembly components.

2.3 COMPONENTS

- A. Structural Steel Framing:
 - 1. Columns: ASTM A500/A500M, Grade B, round or rectangular tubing, sized to suit project design load requirements. Minimum 10 x 6 inch steel tube, 0.188 inch wall thickness.
 - 2. Base and Top Plates: ASTM A36/A36M, with pre-drilled bolt holes.
 - 3. Beams: Wide flange, ASTM A572/A572M, Grade 50.
 - 4. Other Structural Steel Members: ASTM A36/A36M.
- B. Covering:
 - 1. Sheet Metal Decking: Interlocking panels.
 - a. Panel Size: 36 inches wide by 1-1/2 inches deep; 24 gauge thickness.
 - b. Material: ASTM A792/A792M aluminum-zinc alloy coated to AZ50/AZM150.

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- c. Provide canopy manufacturer's standard clip type fasteners for attaching covering to structural beams.
- C. Fascia: Manufacturer's standard 1-1/2 inch, "J" channel profile.
- D. Anchor Bolts: ASTM A307 or ASTM A325, formed with bent shank, assembled with template for casting into concrete.
 - 1. Minimum exposed thread of 7 inches above footing and 23 inch minimum embedment.
 - 2. Provide nuts and washers as required for column leveling and plumbing.
- E. Concrete Footings: Refer to Section 03 3000 for additional requirements.
- F. Exposed Gutters and Downspouts: Galvanized steel with baked enamel finish, color to match canopy covering, manufacturer's recommended size for canopy specified.

2.4 SHOP FABRICATION

- A. Provide a complete system ready for erection at project site.
- B. Shop fabricate to the greatest extent possible; disassemble if necessary for shipping.
- C. Weld steel members in accordance with AWS D1.1/D1.1M.
- D. Fabricate connections for bolt, nut, and washer connectors.

2.5 FINISHES

- A. Structural Steel Framing:
 - 1. Shop Primer: Rust-inhibitive red oxide.
- B. Metal Decking and Roofing: Polyester baked enamel finish; color as selected from manufacturer's standard range.
- C. Fascia: Polyester baked enamel finish; color as selected from manufacturer's standard range.

2.6 ACCESSORIES

- A. Structural Bolts: ASTM F3125/F3125M, Grade A325, minimum 3/4 inch diameter.
- B. Trim, Closure Pieces, Flashings, and Downspout: Same material, thickness and finish as sheet metal decking; factory-fabricated to required profiles.
 - 1. Exposed Fasteners: Not permitted.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates and site area for conditions that might prevent satisfactory installation.
- B. Verify that foundation, electrical utilities, and placed anchors are in correct position.
- C. Verify that bearing surfaces are ready to receive this work.
- D. Do not proceed with installation until all conditions are satisfactory.

3.2 INSTALLATION - FRAMING

- A. Erect framing in accordance with AISC 303.
- B. Provide for erection and wind loads. Provide temporary bracing to maintain structure plumb and in alignment until completion of erection and installation.
- C. Set column base plates with non-shrink grout to achieve full plate bearing.
- D. Fasten columns to anchor bolts.
- E. Do not field cut or alter structural members without approval.
- F. After erection, prime welds, abrasions, and surfaces not shop primed.

3.3 INSTALLATION - CANOPY COVERING

- A. Install in accordance with manufacturer's instructions.
- B. Fasten metal decking to metal support members, aligned level and plumb.
- C. Install fascia panels, trim, flashing, and downspout.
- D. Separate dissimilar metals using concealed bituminous paint.
- E. Touch-up damaged finish coating using material provided by manufacturer to match original coating.

3.4 TOLERANCES

- A. Maximum Variation from Level: Plus/Minus 1/8 inch.

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3.5 CLEANING

- A. Clean surfaces of dust and debris; follow manufacturer's cleaning instructions for the finish used.

3.6 PROTECTION

- A. Protect canopy after installation to prevent damage due to other work until Date of Substantial Completion.

END OF SECTION

SECTION 10 7500 - FLAGPOLES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Aluminum Flagpoles.

1.2 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete base and foundation construction.

1.3 REFERENCE STANDARDS

- A. AASHTO M 36 - Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains; 2014.
- 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. NAAMM FP 1001 - Guide Specifications for Design Loads of Metal Flagpoles; 2007.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on pole, accessories, and configurations.
- C. Shop Drawings: Indicate detailed dimensions, base details, anchor requirements, and imposed loads.

1.5 QUALITY ASSURANCE

- A. Designer Qualifications: Design flagpole foundation under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed the State in which the Project is located.

1.6 WARRANTY

- A. Provide manufacturer's warranty for the following:

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1. Pole shaft warranty against defects in materials or workmanship and to be free from corrosion except those items normally consumed in service for a period of the lifetime of the product's intended use from Date of Substantial Completion.
2. Finish warranty for both its factory-applied powder coatings and all anodized finishes against cracking, peeling or excessive fading due to normal climatic exposure, for a period of one year from Date of Substantial Completion.
3. Hardware and consumables warranty against defects in materials or workmanship for a period of one year from Date of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Spiral wrap flagpole with protective covering and pack in protective shipping tubes or containers.
- B. Protect flagpole and accessories from damage or moisture.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Flagpoles:
 1. Concord American Flagpole: www.concordamericanflagpole.com/#sle.
 2. Pole-Tech Co, Inc: www.poletch.com/#sle.

2.2 FLAGPOLES

- A. Flagpoles: Designed in accordance with NAAMM FP 1001.
 1. Material: Aluminum.
- B. Design: Straight shaft.
 1. Mounting: Ground mounted type.
 2. Outside Butt Diameter: 5 inches.
 3. Outside Tip Diameter: 3 inches.
 4. Nominal Wall Thickness: 0.156 inches.
 5. Nominal Height: 30 ft; measured from nominal ground elevation.
 6. Halyard: Internal type.
- C. Performance Requirements:

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1. Wind Pressure Loading on Flagpole with 2 Flags: Resistant without permanent deformation to 154 miles/hr wind speed, in accordance with NAAMM FP 1001; the factor of safety used is 2.5.

2.3 ACCESSORIES

- A. Finial Ball: Aluminum, 6 inch diameter.
- B. 2 Flags: 1 American and 1 New Mexican design, 4 ft by 6 ft size, nylon fabric, brass grommets, hemmed edges.
- C. Cleats: 9 inch size, aluminum with galvanized steel fastenings, one per halyard.
- D. Halyard: 5/16 inch diameter polypropylene, braided, white.

2.4 MOUNTING COMPONENTS

- A. Foundation Tube Sleeve: AASHTO M 36, corrugated 16 gauge, 0.0598 inch steel, galvanized, depth of 4'-6" inches as indicated.
- B. Pole Base Attachment: Flush; steel base with base cover.
- C. Lighting Ground Rod: 24 inch long copper rod, 3/4 inch diameter.

2.5 FINISHING

- A. Aluminum: Clear anodized.
- B. Finial: Spun finish.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that concrete foundation is ready to receive work and dimensions are as indicated on shop drawings.

3.2 INSTALLATION

- A. Install flagpole, base assembly, and fittings in accordance with manufacturer's instructions.
- B. Electrically ground flagpole installation.

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3.3 TOLERANCES

- A. Maximum Variation From Plumb: 1 inch.

3.4 ADJUSTING

- A. Adjust operating devices so that halyard and flag function smoothly.

END OF SECTION

SECTION 11 3013 - RESIDENTIAL APPLIANCES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Kitchen appliances.
- B. Laundry appliances.

1.2 RELATED REQUIREMENTS

- A. Section 22 1005 - Plumbing Piping: Plumbing connections for appliances.
- B. Section 26 0583 - Wiring Connections: Electrical connections for appliances.

1.3 SUBMITTALS

- A. Product Data: Manufacturer's data indicating dimensions, capacity, and operating features of each piece of residential equipment specified.

1.4 QUALITY ASSURANCE

- A. Electric Appliances: Listed and labeled by UL (DIR) and complying with NEMA Standards (National Electrical Manufacturers Association).

PART 2 PRODUCTS

2.1 KITCHEN APPLIANCES

- A. Provide Equipment Eligible for Energy Star Rating: Energy Star Rated or performance equivalent.
- B. Refrigerator: Free-standing, top-mounted freezer, and frost-free.
 - 1. Capacity: Total minimum storage of 17.5 cubic ft 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. Manufacturer Basis of Design:
 - a. GE Appliances; Model, #GTE18GTHWW: www.geappliances.com.

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- b. Substitutions: See Section 01 6000 - Product Requirements.
- C. Range: Electric, free-standing, with glass-ceramic cooktop.
 - 1. Size: 30 inches wide.
 - 2. Oven: Self-cleaning with electronic ignition.
 - 3. Elements: Four (4).
 - 4. Controls: Solid state electronic.
 - 5. Features: Include automatic meat thermometer, storage drawer, oven door window, broiler pan and grid, and oven light.
 - 6. Exterior Finish: Porcelain enameled steel, color as indicated.
 - 7. Manufacturers:
 - a. GE Appliances: www.geappliances.com/#sle.
 - b. Substitutions: See Section 01 6000 - Product Requirements.
- D. Cooking Exhaust: Range hood.
 - 1. Size: 42 inches wide.
 - 2. Fan: Two-speed, 500 cfm
 - 3. Exhaust: Rectangular, recirculated.
 - 4. Features: Include cooktop light, night light, backdraft damper, and removable grease filter.
 - 5. Exterior Finish: Painted steel, color as indicated.
 - 6. Manufacturers:
 - a. GE Appliances: www.geappliances.com/#sle.
 - b. Substitutions: See Section 01 6000 - Product Requirements.
- E. Microwave: Countertop.
 - 1. Capacity: 1.3 cubic ft.
 - 2. Power: 1000 watts.
 - 3. Features: Include turntable.
 - 4. Exterior Finish: Black.
 - 5. Manufacturers:
 - a. GE Appliances: www.geappliances.com/#sle.
 - b. Substitutions: See Section 01 6000 - Product Requirements.
- F. Dishwasher: Undercounter.
 - 1. Controls: Solid state electronic.
 - 2. Wash Levels: Three (3).

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3. Cycles: Six (6), including normal, rinse and hold, short, china/crystal, and pot and pan.
4. Features: Include rinse aid dispenser, optional no-heat dry, optional water temperature boost, and adjustable upper rack.
5. Finish: Porcelain enameled steel, color as indicated.
6. Manufacturers:
 - a. GE Appliances: www.geappliances.com/#sle.
 - b. Substitutions: See Section 01 6000 - Product Requirements.

2.2 LAUNDRY APPLIANCES

- A. Provide Equipment Eligible for Energy Star Rating: Energy Star Rated.
- B. Clothes Washer: Front-loading.
 1. Size: Large capacity.
 2. Controls: Solid state electronic.
 3. Cycles: Include normal, permanent press, delicate, and soak.
 4. Motor Speed: Variable.
 5. Features: Include optional second rinse, bleach dispenser, fabric softener dispenser, sound insulation, and end of cycle signal.
 6. Finish: Painted steel, color white.
 7. Manufacturer basis of design:
 - a. GE Appliances; Model WCVH4800KWW: www.geappliances.com.
 - b. Substitutions: See Section 01 6000 - Product Requirements.
- C. Clothes Dryer: Electric, stationary.
 1. Size: Large capacity.
 2. Controls: Solid state electronic, with electronic moisture-sensing dry control.
 3. Temperature Selections: Multiple.
 4. Cycles: Include normal, permanent press, knit/delicate, and air only.
 5. Features: Include interior light, stationary rack, sound insulation, and end of cycle signal.
 6. Finish: Painted steel, color white.
 7. Manufacturer basis of design:
 - a. GE Appliances; DCVH480EKWW: www.geappliances.com.
 - b. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify utility rough-ins are provided and correctly located.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

3.3 ADJUSTING

- A. Adjust equipment to provide efficient operation.

3.4 CLEANING

- A. Remove packing materials from equipment and properly discard.
- B. Wash and clean equipment.

END OF SECTION

SECTION 11 5213 - PROJECTION SCREENS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Front projection screen assemblies.

1.2 RELATED REQUIREMENTS

- A. Section 05 5000 - Metal Fabrications: Supports for suspended projection screens.
- B. Section 06 1000 - Rough Carpentry: Wood blocking in walls and ceilings.
- C. Section 09 2116 - Gypsum Board Assemblies: Suspended gypsum board ceilings for recessed screens, and openings in gypsum board partitions for fixed and rear projection screens.
- D. Section 09 5100 - Acoustical Ceilings: Suspended panel ceilings for recessed screens.

1.3 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's catalog cuts and descriptive information on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
 - 4. Wiring diagrams for motor operators and actuators, and controls and switches.
- C. Shop Drawings: For custom installations, indicate dimensions, verified field measurements, mounting details, and interface with adjacent construction.
- D. Samples: For screen fabrics, submit two samples 6 by 6 inch in size.
- E. Samples: For case and frame finishes, submit two samples 6 by 6 inch in size, illustrating color and texture of finish.
- F. Manufacturer's Qualification Statement.
- G. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

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1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of documented experience.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver projection screens to project site in manufacturer's original unopened packaging, and inspect for damage and proper size before accepting delivery.
- B. Store in a protected, clean, dry area with temperature maintained above 50 degrees F, and stack in accordance with manufacturer's recommendations.
- C. Acclimate screens to building temperatures for 24 hours prior to installation, in accordance with manufacturer's recommendations.

1.6 FIELD CONDITIONS

- A. Maintain interior of building between 60 degrees F and 75 degrees F during and after installation of projection screens.

1.7 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Provide one year manufacturer warranty for projection screen assembly.

PART 2 PRODUCTS

2.1 FRONT PROJECTION SCREENS

- A. Manufacturers:
 - 1. Bretford: www.bretford.com.
 - 2. Da-Lite Screen Company: www.da-lite.com.
 - 3. Draper, Inc: www.draperinc.com/sle.
- B. Front Projection Screens: Factory assembled unless otherwise indicated.

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- C. Matte Light Diffusing Fabric: Light diffusing screen fabric; washable, flame retardant and mildew resistant.
 - 1. Seams: No seams permitted in fabric up to 96 inch high by 72 inch wide.
- D. Extra Drops: Black; 11 inch.
- E. Concealed-in-Ceiling Screen Cases: Steel, with integral roller brackets.
 - 1. Door Slat: Self trim; self-closing and -opening.
 - 2. Case Finish: Baked enamel.
 - 3. Case Color: White.
 - 4. End Caps: Steel; finished to match case.
- F. Manually-Operated Screens:
 - 1. Roller: 1-3/4 inch aluminum; spring loaded with locking device.
 - 2. Screen Pull: Ring on bottom bar.
 - 3. Vertical Tensioning: Screen fabric weighted at bottom with steel bar and plastic end caps.
- G. Provide mounting hardware, brackets, supports, fasteners, and other mounting accessories required for a complete installation, in accordance with manufacturer's recommendations for specified substrates and mountings.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that substrate is finished and ready to accept screen installation.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Verify that openings for recessed screens are correctly sized.
- D. Do not install projection screens until climate control systems are in place and interior painting and other finishes are completed.

3.2 PREPARATION

- A. Coordinate screen installation with installation of projection systems.
- B. Coordinate installation with adjacent construction and fixtures, including ceilings, walls, lighting, fire suppression, and registers and grilles.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions, using manufacturer's recommended hardware for relevant substrates.
- B. Do not field cut screens.
- C. Install screens in mountings as specified and as indicated on drawings.
- D. Install plumb and level.
- E. Adjust projection screens and related hardware in accordance with manufacturer's instructions for proper placement and operation.

3.4 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 2400 - WINDOW SHADES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Interior manual roller shades.

1.2 RELATED REQUIREMENTS

- A. Section 06 1000 - Rough Carpentry: Concealed wood blocking for attachment of headrail brackets.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week prior to commencing work related to products of this section; require attendance of affected installers.
- B. Sequencing:
 - 1. Do not fabricate shades until field dimensions for each opening have been taken with field conditions in place.
 - 2. Do not install shades until final surface finishes and painting are complete.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets, including materials, finishes, fabrication details, dimensions, profiles, mounting requirements, and accessories.
- C. Shop Drawings: Include shade schedule indicating size, location and keys to details.
- D. Selection Samples: Include fabric samples in full range of available colors and patterns.
- E. Verification Samples: Minimum size 6 inches square, representing actual materials, color and pattern.
- F. Manufacturer's Instructions: Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- G. Operation and Maintenance Data: List of all components with part numbers, sources of supply, and operation and maintenance instructions; include copy of shop drawings.

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- H. Warranty: Submit sample of manufacturer's warranty and documentation of final executed warranty completed in Owner's name and registered with manufacturer.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of this type with minimum five years of documented experience with shading systems of similar size and type.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver shades in manufacturer's unopened packaging, labeled to identify each shade for each opening.
- B. Handle and store shades in accordance with manufacturer's recommendations.

1.7 FIELD CONDITIONS

- A. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 WARRANTY

- A. Provide manufacturer's warranty from Date of Substantial Completion, covering the following:
 - 1. Shade Hardware: One year.
 - 2. Fabric: One year.
 - 3. Aluminum and Steel Coatings: One year.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Interior Manually Operated Roller Shades:
 - 1. MechoShade Systems LLC: www.mechoshade.com/#sle.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.
- B. Interior Motorized Roller Shades, Motors and Motor Controls:
 - 1. MechoShade Systems LLC: www.mechoshade.com/#sle.
 - 2. Substitutions: See Section 01 6000 - Product Requirements.

2.2 ROLLER SHADES

A. General:

1. Provide shade system components that are easy to remove or adjust without removal of mounted shade brackets.
2. Provide shade system that operates smoothly when shades are raised or lowered.

B. Roller Shades:

1. Description - Interior Roller Shades: Single roller, manually operated fabric window shade system complete with mounting brackets, roller tubes, hembars, hardware, and accessories.
 - a. Mounting: Window jamb mounted - inside, between jambs.
 - b. Size: As indicated on drawings.
2. Brackets and Mounting Hardware: As recommended by manufacturer for mounting indicated and to accommodate shade fabric roll-up size and weight.
3. Roller Tubes: As required for type of shade operation.
4. Hembars: Designed to maintain bottom of shade straight and flat.
5. Manual Operation for Interior Shades:
 - a. Clutch Operator: Manufacturer's standard material and design, permanently lubricated.
 - b. Drive Chain: Continuous loop beaded ball chain, 95 pounds minimum breaking strength. Provide upper and lower limit stops.
6. Accessories:
 - a. Fascia: Extruded aluminum, size as required to conceal shade mounting, attachable to brackets without exposed fasteners; fabric wrapped finish to match shade.
 - b. Fasteners: Noncorrosive, and as recommended by shade manufacturer.

2.3 SHADE FABRIC

- A. Fabric: Nonflammable, color-fast, impervious to heat and moisture, and able to retain its shape under normal operation.

2.4 ROLLER SHADE FABRICATION

- A. Field measure finished openings prior to ordering or fabrication.
- B. Dimensional Tolerances: Fabricate shades to fit openings within specified tolerances.
 1. Vertical Dimensions: Fill openings from head to sill with 1/2 inch space between bottom bar and window stool.

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2. Horizontal Dimensions - Inside Mounting: Provide symmetrical light gaps on both sides of shade not to exceed 3/4 inch total.
- C. At openings requiring continuous multiple shade units with separate rollers, locate roller joints at window mullion centers; butt rollers end-to-end.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine finished openings for deficiencies that may preclude satisfactory installation.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Start of installation shall be considered acceptance of substrates.

3.2 PREPARATION

- A. Prepare surfaces using methods recommended by manufacturer for achieving best result for substrate under the project conditions.
- B. Coordinate with window installation and placement of concealed blocking to support shades.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions and approved shop drawings, using mounting devices as indicated.
- B. Adjust level, projection, and shade centering from mounting bracket. Verify there is no telescoping of shade fabric. Ensure smooth shade operation.

3.4 CLEANING

- A. Clean soiled shades and exposed components as recommended by manufacturer.
- B. Replace shades that cannot be cleaned to "like new" condition.

3.5 CLOSEOUT ACTIVITIES

- A. See Section 01 7800 - Closeout Submittals, for closeout submittals.
- B. See Section 01 7900 - Demonstration and Training, for additional requirements.

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- C. Demonstration: Demonstrate operation and maintenance of window shade system to Owner's personnel.
- D. Training: Train Owner's personnel on operation and maintenance of system.
 - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
 - 2. Provide minimum of two hours training by manufacturer's authorized personnel at location designated by the Owner.

3.6 PROTECTION

- A. Protect installed products from subsequent construction operations.
- B. Touch-up, repair, or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 12 3600 - COUNTERTOPS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Countertops for architectural cabinet work.

1.2 RELATED REQUIREMENTS

- A. Section 06 4100 - Architectural Wood Casework.
- B. Division 22 - Plumbing Fixtures: Sinks or Lavatories in countertops, as scheduled.

1.3 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.
- B. AWI (QCP) - Quality Certification Program; Current Edition.
- C. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014, with Errata (2018).
- D. ISFA 2-01 - Classification and Standards for Solid Surfacing Material; 2013.
- E. ISFA 3-01 - Classification and Standards for Quartz Surfacing Material; 2013.
- F. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.
- G. NSI (DSDM) - Dimensional Stone Design Manual, Version VIII; 2016.

1.4 SUBMITTALS

- A. See Section 01 3000 - 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.

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- 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 square, representing actual product, color, and patterns.
- F. Test Reports: Chemical resistance testing, showing compliance with specified requirements.
- G. Certificate: Submit labels and certificates required by quality assurance and quality control programs.
- H. Maintenance Data: Manufacturer's instructions and recommendations for maintenance and repair of countertop surfaces.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Certified participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.
- B. Quality Certification:
 - 1. Comply with AWI (QCP) woodwork association quality certification service/program in accordance with requirements for work specified in this section: www.awiqcp.org/#sle.
 - a. This project should be registered by the general contractor or by the woodworker supplying for the project.
 - 2. Provide labels or certificates indicating that the installed work complies with AWI/AWMAC/WI (AWS) requirements for grade or grades specified.
 - 3. Provide designated labels on shop drawings as required by certification program.
 - 4. Provide designated labels on installed products as required by certification program.
 - 5. Receive a minimum of one AWI (QCP) compliance inspection.
 - 6. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.

1.6 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.

1.7 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.

1.8 WARRANTY

- A. See Section 01 7800 - Closeout Submittals.
- B. Provide a written warranty that all materials and workmanship will be free from defects for a period of one year from the date of Substantial Completion of the project. Any defective work is to be repaired or replaced at no cost to the Owner.

PART 2 PRODUCTS

2.1 COUNTERTOPS

- A. Quality Standard: See Section 06 4100.
- B. Solid Surfacing Countertops (**SS-X**): Solid surfacing sheet or plastic resin casting over continuous substrate.
 - 1. See Finish Legend.
 - 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) As indicated on drawings.
 - b. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.
 - c. Finish on Exposed Surfaces: Matte, gloss rating of 5 to 20.
 - d. Color and Pattern: As indicated on drawings.
 - 3. Other Components Thickness: 1/2 inch, minimum.
 - 4. Exposed Edge Treatment: Built up to minimum 1-1/2 inch thick; square edge, unless otherwise indicated.
 - 5. Back and End Splashes: Same sheet material, square top; minimum 4 inches high.
 - 6. Skirts: As indicated on drawings.

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- C. Natural Quartz and Resin Composite Countertops (**QZ-X**): Sheet or slab of natural quartz and plastic resin over continuous substrate.
1. See Finish Legend.
 2. Natural Quartz and Resin Composite Sheets, Slabs and Castings: Complying with ISFA 3-01 and NEMA LD 3; orthophthalic polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard stone fabrication tools; no surface coating; color and pattern consistent throughout thickness.
 - a. Manufacturers:
 - 1) As indicated on drawings.
 - b. Factory fabricate components to the greatest extent practical in sizes and shapes indicated; comply with NSI (DSDM).
 - c. Finish on Exposed Surfaces: Polished.
 - d. Color and Pattern: As indicated on drawings.
 3. Other Components Thickness: 3/4 inch, minimum.
 4. Exposed Edge Treatment: Built up to minimum 1-1/4 inch thick; square edge; use marine edge at sinks.
 5. Back and End Splashes: Same sheet material, square top; minimum 4 inches high.

2.2 MATERIALS

- A. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.
- B. Joint Sealant: Mildew-resistant silicone sealant, white.

2.3 FABRICATION

- A. 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 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.
- B. 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, unless otherwise indicated.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.
- B. Seal joint between back/end splashes and vertical surfaces.

3.4 TOLERANCES

- A. Variation From Horizontal: 1/8 inch in 10 feet, maximum.
- B. Offset From Wall, Countertops: 1/8 inch maximum; 1/16 inch minimum.
- C. Field Joints: 1/8 inch wide, maximum.

3.5 CLEANING

- A. Clean countertops surfaces thoroughly.

3.6 PROTECTION

- A. Protect installed products until completion of project.

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- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION