PROJECT MANUAL

PROJECT NAME:

Clarinda Correctional Facility (CCF) Kitchen and Laundry Addition

(Volume 1 of 2) (DIV 00 – DIV 12)

PROJECT ADDRESS:
Clarinda Correctional Facility (CCF)
2000 N. 16th St.
Clarinda, IA, 51632

PROJECT DATE: February 9, 2024

OWNER:
Iowa Department of Administrative Services
109 Southeast 13th Street
Des Moines, Iowa 50319

OWNER PROJECT NUMBER: 9223.00

OWNER REQUEST FOR BID NUMBER: RFB 922300-02

CONSTRUCTION MANAGER:
The Samuels Group
2929 Westown Parkway
Suite 200
West Des Moines, IA
50266

CONSTRUCTION MANAGER PROJECT NUMBER: 7673

ARCHITECT:
Farnsworth Group
14225 University Ave.
Ste 110
Waukee, IA
50263

ARCHITECT PROJECT NUMBER: 0240202.00

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DESIGN CONSULTANTS

CONSULTANT:
Rippe Associates
10400 Yellow Circle Drive
Ste 100
Minneapolis, MN
55343

ENGINEER:
Bishop Engineering
3501 104th St.
Urbandale, IA
50322

ENGINEER:
Farnsworth Group
14225 University Ave.
Ste 110
Waukee, IA
50263

ENGINEER:
IMEG
2882 106th St
Des Moines, IA
50263

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SECTION 00 0107
SEALS PAGE



I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

SIGNED: Seth V. Sunderman DATE: 2/6/2024

SETH V. SUNDERMAN, P.E. 23468

LICENSE RENEWAL DATE: DEC. 31, 2025

PAGES OR SHEETS COVERED BY THIS SEAL: Section 31, 32 & 33



I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA

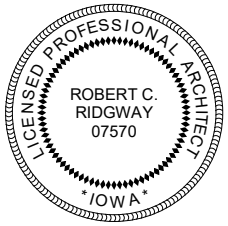
2/6/2024

NATHAN T. KRESS (DATE)

MY LICENSE RENEWAL DATE IS DECEMBER 31, 2025

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014500, 033000, 051200, 052100,
053100, 054000, 055000, 312005



I hereby certify that the portion of this technical submission described below was prepared by me or under my direct personal supervision and responsible charge. I am a duly licensed architect under the laws of the state of Iowa.

Signature: 2/6/2023

ROBERT C. RIDGWAY Date

License Expires: June 30, 2025

Pages or sheets covered by this seal: 02 4100, 03 3511, 03 4500, 04 2000, 05 5100, Div. 6 – 10, 11 1900, 11 1910, 11 1940, 12 3600



I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

ERIC J. HENDERSON — 02/06/2024

ERIC J. HENDERSON — DATE

MY LICENSE EXPIRATION DATE IS: 12/31/2025

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KRISTEN SPINA — 02/06/2024

KRISTEN SPINA — DATE

MY LICENSE EXPIRATION DATE IS: 12/31/2025

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SECTION 00 0116

BID SUBMITTAL CHECKLIST

PART 1 - **GENERAL**

1.01 **BID SUBMITTAL CHECKLIST**

A. The Bidder is responsible to see that the bid is submitted online at IMPACS Electronic Procurement System on or before the due date and time specified. Late bids shall not be accepted.
B. Bids shall be typewritten or in ink. All information requested shall accompany the bid. All blocks shall be completed. Errors shall be lined out and initialed.
C. The right is reserved to reject any or all bids. The State may waive minor deficiencies or informalities in the best interest of the State of Iowa.
D. A properly prepared and submitted bid document is the bidder's responsibility.
E. Bids cannot be changed after the bid opening.
F. In all cases, no verbal communications by any party will override written communications from the issuing office.
G. The Bid Form shall be completed in full and signed and submitted by an officer of the bidder with authority to bind in a contract.
H. If Bid Bond is called for, it shall accompany the Bid submission.
I. If Non-discrimination Clause information is called for, it shall accompany the Bid submission
J. If Targeted Small Business Pre-bid Contact information is called for, it shall accompany the Bid submission.
K. If Certificate of Site Visit form is called for, it shall accompany the Bid submission.

PART 2 - **PRODUCTS – NOT USED**

PART 3 - **EXECUTION – NOT USED**

END OF SECTION

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SECTION 00 1113
NOTICE TO BIDDERS

RFB #922300-02

The Iowa Department of Administrative Services will be receiving bids for the construction of a new kitchen and laundry facility at the Clarinda Correctional Facility (CCF) 2000 N. 16th St., Clarinda, IA 51632. Scope of the project includes general construction, concrete, masonry, precast, structural steel, EPDM roofing, food service equipment, fire suppression, plumbing, HVAC, electrical, communications, electronic safety/security, earthwork, paving, utilities, etc.

The Iowa Department of Administrative Services anticipates construction to begin May 2024 and end July 2025.

Bids must be received no later than ***2:00 pm, Thursday, March 7, 2024***. Late bids will not be considered. Bids shall be submitted on IMPACS Electronic Procurement System. The Bid shall be accompanied by a Bid Security as set forth in the Instructions to Bidders in the amount of 5% of the total bid amount. Each bid shall be accompanied by a bid bond, cashier's check or a certified check drawn upon a solvent bank chartered under the laws of the United States of America.

Bid Opening
The time and place of bid opening will be held at meet.google.com/nwe-mxni-irw and teleconference number 1-260-227-7423 Pin: 136 678 106# at 3:00 pm on March 7, 2024.

The Iowa Department of Administrative Services reserves the right to reject any and all bids, and to waive irregularities and to accept a bid that is deemed in the best interest of the State of Iowa.

Bidders must comply with all affirmative action/equal employment opportunity provisions of the State of Iowa and the Federal Government.

This project is exempt from Iowa Sales Tax. Davis Bacon Wages **will not** apply to this project.

Questions must be submitted by ***2:00 pm, February 23, 2024*** to the Issuing Officer.

Bidding documents may stipulate a specific product. Substitute product will be considered if a written request is received by ***2:00 pm, February 23, 2024*** prior to bid opening. Substitution requests will be considered for all products per Section 01 2500 Substitution Procedures, even if the specification does not include a statement such as "or equal," "equal to," "equivalent to," or "basis of design," unless otherwise noted.

An **optional** Pre-Bid meeting will be held on February 20, 2024 at 10:00 am at the Clarinda Correctional Facility (CCF), 2000 N. 16th St., Clarinda, Iowa 51632. Interested parties should park in the west parking lot of CCF and enter through the west pedestrian gate. This meeting is not mandatory but is highly recommended.

Bidding Documents, including drawing sheets bearing the project name Clarinda Correctional Facility – Kitchen & Laundry Addition, Dated 02-09-2024 and the Project Manual prepared by Farnsworth Group dated 02-09-2024, may be obtained from may be obtained from Rapids Reproductions by calling (319) 364-2473 or emailing www.rapidsrepro.com on Monday, February 12, 2024.

For further information regarding this project contact:
Michael Bradbury – Issuing Officer
Phone: 515-823-9327
E-Mail: construction.procurement@iowa.gov

END OF SECTION

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SECTION 00 2113

INSTRUCTIONS TO BIDDERS

RFB #922300-02

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Project Description
B. Owner
C. State Agency Representatives and Contacts
D. Proposal Form and Submissions
E. Taxes
F. Alternate Bids
G. Drawings
H. Bid Security
I. Due Date and Time for Receipt of Bids
J. Commencement and Completion Date
K. Site Visit
L. Pre-bid Meeting
M. Questions
N. Addenda and Interpretations of the Contract Documents
O. Substitutions
P. Obligation of Bidder
Q. Public Records and Requests for Confidential Treatment
R. Withdrawal of Bid
S. Bid Closing
T. Basis of Bids
U. Informalities/Rejection of Bids
V. Consideration of Bids
W. Preference
X. Qualifications
Y. Insurance
Z. Form of Agreement between Owner and Contractor
AA. Execution of Contract
BB. Laws and Regulations
CC. Contract Documents and Order of Precedence
DD. Conditions of the Work
EE. Subcontracts
FF. Project Manual/Drawings

1.02 PROJECT DESCRIPTION

A. Project Description: The project includes the construction of a new kitchen and laundry building for the Clarinda Correctional Facility. Scope of the project includes general construction, concrete, masonry, precast, structural steel, EPDM roofing, food service equipment, fire suppression, plumbing, HVAC, electrical, communications, electronic safety/security, earthwork, paving, utilities, etc.

1.03 OWNER

A. State of Iowa, Department of Administrative Services, 109 SE 13th St, Des Moines, IA 50319

1.04 STATE AGENCY REPRESENTATIVES AND CONTACTS

A. PURCHASING AGENT: Michael Bradbury**.** State of Iowa, Department of Administrative Services**,** Hoover State Office Building, 3rd floor**,** 1305 East Walnut Street**,** Des Moines, IA 50319-0105, Phone: 515-823-9327; email: construction.procurement@iowa.gov

B. OWNER REPRESENTATIVE: Brad Tonyan**,** State of Iowa, Department of Administrative Services, 109 SE 13th Street, Des Moines, IA 50319, Phone: 515-360-7718; email: brad.tonyan@iowa.gov.

C. ON-SITE COORDINATOR: Chris Falk, Plant Operations Manager, Phone: 712-542-6106; email: christopher.falk@iowa.gov.

D. CONSTRUCTION MANAGER CONTACT: Brian Polzin & Rusty Richardson, Samuels Group, 2929 Westown Parkway, Suite 200, West Des Moines. IA 50266, Phone: Brian - 515-218-0227 Rusty – 515-402-1636; email: bpolzin@samuelsgroup.net. or rrichardson@samuelsgroup.net

E. DESIGN PROFESSIONAL CONTACT: Kelsey Vetter, Farnsworth Group**,** 14225 University Ave STE #110**,** Phone: 515-225-3469; email: kvetter@f-w.com

F. COMMISSIONING AGENT CONTACT: Matt Faber, Denovo, 300 4th Street, West Des Moines, Iowa, 50265, Phone: 515-512-3250; email: mfaber@teamdenovo.com

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 PROPOSAL FORM AND SUBMISSION

A. A properly prepared and submitted bid is the bidder's responsibility. Bids are to be made in accordance with these Instructions to Bidders and items included on the Bid submission. Failure to comply may be cause for rejection.
B. The Bid is to consist of the required Bid information, together with the other information specified below to be submitted with the Bid, in which copies are included with these Bidding Documents.
   1. The total bid package submitted is required to include the following:
      a. An online submission including:
         1) Required Bid Form (To be uploaded online)
         2) Required Non-discrimination Clause Information
         3) Required Targeted Small Business Pre-bid Contact Information
         4) Bid Security (documentation provided by Bidder) (To be uploaded online) (Required)
         5) Certification of Site Visit (To be uploaded online if Pre-Bid is Mandatory)
C. Include the amount for performing all work described in the drawings and specifications for Base Bid and for each Alternate Bid requested.
D. Acknowledge receipt of all Addenda issued, where so indicated on the Bid Form
E. All required information to be submitted, by an officer of the company having authority to bind the company in a contract.
F. Commencement of the work of the contract shall begin with the Contractor's receipt of a fully executed contract (signed by both parties).
G. The Owner reserves the right to award a contract for Base Bid only, or for Base Bid in combination with any, or all, identified Alternate Bids. The Owner reserves the right to award a contract for individual Bid Packages, or any combination of Bid Packages. Each Bidder must comply with all of the General Requirements of the project and any requirements of the Project manual that apply to their scope of work.

H. The company's Federal I.D. Number and the Iowa Contractors Registration Number shall be included in the Bid Form.
I. Unless indicated otherwise, the Bid shall be for a single responsibility contract for all work as indicated on the Drawings and specified in the Project Manual, and shall be a lump sum amount. If no change in the Base Bid amount is required with respect to consideration of a particular Alternate Bid, enter “No Change” in the blank for that Alternate Bid.
J. Where so requested, provide Unit Prices for the designated types of work and in the units specified, in which the Unit Prices would be used as adjustments to the quantities described in the instructions as the basis for the Base Bid and any Alternate Bid work. A Unit Price would be applicable in the event the Owner should request additional work of that type beyond the extent and quantity that has been established as the scope of the work by graphic delineation and notations on the Drawings, or by otherwise stipulating in the Bidding Documents a numerical quantity of the work, for the Bidder’s use in determining the lump sum bid amount for the Base Bid and any requested Alternate Bid containing such work. The Unit Prices shall also be used to adjust the Contract Amount for actual quantities of work involved when the work subject to Unit Price adjustment differs by being less in quantity than that contemplated by the original scope of work for the respective Base Bid or Alternate Bid.
K. Completed State of Iowa Nondiscrimination Clause information and Subcontractor Targeted Small Business Enterprise Pre-Bid Contact Information, included in these Bidding Documents, are to accompany the Bid submission. Bidders shall comply with all affirmative action/equal opportunity provisions of State and Federal laws. The Owner seeks to provide opportunities for Targeted Small Businesses in accordance with the provisions of Chapter 73 of the Code of Iowa.
L. All Bid information is to be submitted online. Any required Bid Security shall be provided, in the form and amount specified elsewhere in these Instructions to Bidders, at the time of submission of the Bid. When a site visit is mandatory as specified elsewhere in these Instructions to Bidders, and a Certificate of Site Visit is required to be submitted with the Bid as evidence of such visit having occurred for purposes of observing the conditions of the site and the work proposed therein, the Certificate shall be uploaded with the bid submission.

3.02 TAXES

A. In accordance with Section 423 of the Code of Iowa and 701-19 of the Iowa Administrative Rules, Iowa Construction Sales Tax Exemption Certificates for this project will be issued. Do not include Iowa sales tax or use tax, or any local option sales tax, on construction materials in determining your bid prices. The successful Contractor will be required to notify the Department of Administrative Services project manager of all Subcontractors within forty-eight (48) hours after the published date and time by which bids must be submitted. Information on the Contractor and each Subcontractor shall include the firms' name, address, contact person, federal tax identification number, and the Iowa contractor registration number. For the Contractor and each Subcontractor, designate the type of trade or category of work that is to be provided on the project. The Construction Manager for the Department of Administrative Services must be informed when any Subcontractor is added to the project. Following receipt of the information, the Construction Manager for the Department of Administrative Services will arrange to have an authorization letter and certificate (please see sample, included in the Project Manual) issued on behalf of the Contractor and each Subcontractor and will forward the documents to the Contractor for distribution and use by each in purchasing construction materials for this project. Certificates issued for this project shall be used for tax-exempt purchasing construction materials for this project only.

3.03 ALTERNATE BIDS

A. Bidders are to bid all Alternates requested on the Bid Form. Alternates quoted will be reviewed and accepted or rejected at the option of the Department of Administrative Services. Accepted Alternates will be identified in the Owner-Contractor agreement. Indicate the price for Alternates

described, as shown on the Drawings and specified in the Project Manual, and identify in the correct location on the Bid Form.

3.04 DRAWINGS AND PROJECT MANUAL

A. Drawings and Project Manual are specified in the Notice to Bidders or any extension thereof made by Addendum.

3.05 BID SECURITY

A. Each Bid shall be accompanied by Bid Security.
B. The Bid Security shall be in the form of a Bid Bond, Certified check, or Cashier's check in an amount not less than five percent (5%) of the maximum value of the Bid, including any additive Alternates. NOTE: Checks other than Certified checks and Cashier's checks will not be accepted. Bonds shall be issued by a bonding company licensed to transact business in the State of Iowa. The Attorney in Fact who signs the Bond shall file with the Bond a certified and effectively dated copy of their Power of Attorney. The Bid Security shall be made payable to the Iowa Department of Administrative Services, and shall accompany the Bid. If a Bid Bond is not used, copies of Certified checks or Cashier's checks must be uploaded and hand delivered, in a sealed envelope, or mailed upon request. The Bid Security shall serve as a guarantee that a Bidder who is offered a contract will enter into an Agreement with the State of Iowa and will file an approved surety company's Performance Bond, Payment Bond and the Insurance Certificates as evidence of the required Insurance prior to execution of the contract. Upon failure to comply, the Bid Security shall be forfeited as liquidated damages. The governmental entity shall retain the bid security furnished by the successful bidder until the approved contract form has been fully executed, a bond has been filed by the bidder guaranteeing the performance of the contract, and the contract and bond have been approved by the governmental entity. The provisions of chapter 573, where applicable, apply to contracts awarded under this chapter. The governmental entity shall promptly return the checks or bidder's bonds of unsuccessful bidders to the bidders once the Notice of Intent to Award is issued.

3.06 DUE DATE AND TIME FOR RECEIPT OF BIDS

A. Properly completed Bids shall be submitted online through IMPACS Electronic Procurement System, no later than the time and date specified in the Notice to Bidder or any extension thereof made by Addendum. Written, emailed, oral or telephonic Bids are invalid, and will not receive consideration. The Bidder shall assume full responsibility for the timely online submission of the Bid. Late bids will not be accepted.

3.07 COMMENCEMENT AND COMPLETION DATES

A. Commencement of the Work of the Contract shall be the day of receipt by the selected Contractor of the fully-executed contract. Final completion of the Work of the contract shall be acknowledged as a part of the Contractor's proposal.

3.08 SITE VISIT

A. A site visit by the prospective bidder is highly recommended at the time of the Pre-Bid Meeting of this project.

3.09 PRE-BID MEETING

A. Pre-Bid Meeting will be specified in the Notice to Bidders or any extension thereof made by Addendum.

3.010 QUESTIONS

A. Questions on this project may be raised and discussed at the time of the Pre-Bid Meeting or by submitting in writing to the issuing officer as specified in the Notice to Bidders or any extension thereof made by Addendum.

3.011 ADDENDA AND INTERPRETATIONS OF THE CONTRACT DOCUMENTS

A. Any person contemplating submitting a proposal for the proposed Contract, who is in doubt as to the true meaning of any part of the Bidding Documents, shall submit a written request for an interpretation thereof. The person submitting a request will be responsible for its prompt delivery. Every request for such interpretation should reference the Bid Number specified in the Bidding Documents, and shall be made in writing (email preferred). Questions shall be submitted to the previously identified Purchasing Agent for the Department of Administrative Services. To be given consideration, requests shall be received as specified in the Notice to Bidders or any extension thereof made by Addendum. Replies, which revise or correct the Bidding Documents, or provide necessary clarifications, will be issued in the form of a written Addendum to the Bidding Documents. Interpretations, corrections or changes of the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely upon such interpretations, corrections, or changes. The Bidder is to include any resultant cost changes in the Bid Sum. Addenda will be posted electronically at the respective bid site where the bid is initially posted. Acknowledgment by the Bidder of each issued Addendum shall be noted in the location so indicated on the Bid. All Addenda issued shall become part of the Contract Documents.

3.012 SUBSTITUTIONS

A. Where the Bidding Documents stipulate a specific product be provided by naming one or more manufacturer and model, a substitute product will be considered when a written request is received as specified in the Notice to Bidders or any extension thereof made by Addendum prior to bid opening. Substitution requests will be considered for all products per Section 01 2500 Substitution Procedures, even if the specification does not include a statement such as “or equal,” “equal to,” “equivalent to,” or “basis of design,” unless otherwise noted. Substitution requests shall be emailed to the Issuing Officer at the email address provided in Instructions to Bidders Section 1.04.

3.013 OBLIGATION OF BIDDER

A. It shall be the responsibility of each Bidder contemplating the submission of a Bid for the proposed Contract to fully acquaint himself/herself with conditions at the work site, project requirements, and to become acquainted thoroughly with the work, and all conditions that may be related to it. No considerations or revision in the contract price or scope of the project will be considered by the Owner for any item that could have been revealed by a thorough on-site inspection and examination.
B. By submission of a Bid, it shall be understood that the Bidder assures that he/she has reviewed and is thoroughly familiar with the project requirements, contract conditions and supplementary conditions, the drawings, specifications, addenda, and that the bidder is aware of the conditions existing at the site that may relate to the work of this project. Failure of any Bidder to examine any form, document, or other instrument shall in no way relieve the Bidder from any obligation in respect to his/her Bid.

3.014 PUBLIC RECORDS AND REQUESTS FOR CONFIDENTIAL TREATMENT

A. The Agency's release of public records is governed by Iowa Code chapter 22. Contractors are encouraged to familiarize themselves with Chapter 22 before submitting a Proposal. The Agency will copy and produce public records upon request as required to comply with Chapter 22 and will treat all information submitted by a Contractor as non-confidential records unless Contractor requests specific parts of the Proposal be treated as confidential at the time of the submission as set forth herein AND the information is confidential under Iowa or other applicable law.
B. A Contractor requesting confidential treatment of specific information must: (1) fully complete Form 22 (Available at https://das.iowa.gov/sites/default/files/procurement/pdf/Form%2022-ConfidentialityRequest-RFB.pdf), (2) identify the request in the transmittal letter with the Contractor's Proposal, (3) conspicuously mark the outside of its Proposal as containing confidential information, (4) mark each page upon which confidential information appears, and (5) submit a "Public Copy" from which the confidential information has been excised.
C. Form 22 will not be considered fully complete unless, for each confidentiality request, the Contractor: (1) enumerates the specific grounds in Iowa Code chapter 22 or other applicable law that supports treatment of the material as confidential, (2) justifies why the material should be maintained in confidence, (3) explains why disclosure of the material would not be in the best interest of the public, and (4) sets forth the name, address, telephone, and e-mail for the person authorized by Contractor to respond to inquiries by the Agency concerning the confidential status of such material.
D. The Public Copy from which confidential information has been excised is in addition to the number of copies requested in Section 3 of this RFP. The confidential material must be excised in such a way as to allow the public to determine the general nature of the material removed and to retain as much of the Proposal as possible.
E. **Failure to request information be treated as confidential as specified herein shall relieve Agency and State personnel from any responsibility for maintaining the information in confidence. Contractors may not request confidential treatment with respect to pricing information and transmittal letters. A contractor's request for confidentiality that does not comply with this section or a contractor's request for confidentiality on information or material that cannot be held in confidence as set forth herein are grounds for rejecting contractor's Proposal as non-responsive. Requests to maintain an entire Proposal as confidential will be rejected as non-responsive.**
F. If Agency receives a request for information that Contractor has marked as confidential and if a judicial or administrative proceeding is initiated to compel the release of such material, Contractor shall, at its sole expense, appear in such action and defend its request for confidentiality. If Contractor fails to do so, Agency may release the information or material with or without providing advance notice to Contractor and with or without affording Contractor the opportunity to obtain an order restraining its release from a court possessing competent jurisdiction. Additionally, if Contractor fails to comply with the request process set forth herein, if Contractor's request for confidentiality is unreasonable, or if Contractor rescinds its request for confidential treatment, Agency may release such information or material with or without providing advance notice to Contractor and with or without affording Contractor the opportunity to obtain an order restraining its release from a court possessing competent jurisdiction.

3.015 WITHDRAWAL OF BID

A. A Bid may be modified or withdrawn only before the time and date for receipt of Bids. Said request for modification or withdrawal of a bid must be completed online through IMPACS Electronic Procurement System. A Bid shall remain valid for consideration by the Owner for the following period(s) of time after the date specified for receipt of Bids, or until such time following that period that the apparent low bidder requests in writing that the Bid be withdrawn, after which the Bid may be withdrawn without forfeiture of any required Bid Security. The Bid shall be valid for not less than thirty (30) calendar days after the date Bids are specified to be due. With the approval of the Department of Administrative Services, a bid may be withdrawn after opening, but o

nly if the bidder provides prompt written notification that adequately documents the commission of an honest error that may cause undue financial loss.

3.016 BID OPENING

A. All bids received on or before the due date and time specified in the Notice to Bidder or any extension thereof made by Addendum will be opened and the name of the Bidder and the amount of their Bid will be announced.

3.017 BASIS OF BIDS

A. The Bidder shall include all additional documents or appendices that are requested to be submitted concurrent with the Bid submission; failure to comply may be cause for rejection.
B. In accordance with Iowa law, Section 8A.311: A bidder, to be considered for an award of a state construction contract, shall disclose to the state agency awarding the contract the names of all subcontractors and suppliers who will work on the project being bid, within forty-eight (48) hours after the published date and time by which bids must be submitted. A bidder shall not replace a subcontractor or supplier disclosed without the approval of the state agency awarding the contract.
    1. A bidder, prior to an award or who is awarded a state construction contract, shall disclose all of the following, as applicable:
        a. If a subcontractor or supplier disclosed (under the preceding) by a bidder is replaced, the reason for replacement and the name of the new subcontractor or supplier;
        b. If the cost of work to be done by a subcontractor or supplier is changed or if the replacement of a subcontractor or supplier results in a change in the cost, the amount of the change in cost.
        c. Any reduction in subcontractor or supplier price as a result of the change, if the change is approved by the Owner, shall be deducted from the Trade Contract via a deductive Change Order. Any such changes, if approved by the Owner, which result in an increase in the Trade Contract Price shall be borne by the Trade Contractor.
C. The Bidder is specifically advised that any person, firm or other party to whom it is proposed to award a subcontract under this contract must:
    1. Be registered in the State of Iowa and have an Iowa Contractor’s Registration number, and
    2. Be acceptable to the Owner.

3.018 INFORMALITIES/ REJECTION OF BIDS

A. The Iowa Department of Administrative Services reserves the right to waive any irregularities or informalities and to enter into a Contract with a Bidder, or to reject any or all bids as it deems to be in the best interest of the State, without penalty.

3.019 CONSIDERATION OF BIDS

A. It is the intent of the Department of Administrative Services to award a Contract to the lowest responsible Bidder, provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and is determined to be compliant with all Bidding Requirements, and does not exceed the funds available for construction.
B. Bidder is to bid on each Alternate Bid requested. Failure to do so may result in disqualification of the bid. The Department of Administrative Services reserves the right to accept any, or no, Alternate Bid. Alternate Bids may be considered in any order or combination, and the low successful Bidder will be determined on the basis of the sum of the Base Bid and the Alternate(s) accepted at the time of the Contract award.
C. In evaluating Bids, any proposal offered by a Bidder for an alternate design, or for materials other than those shown or specified for the Base Bid or for Alternate Bid construction under the

proposed Construction Documents or called for by any issued Addenda to those Construction Documents, will not be considered in determining the low successful Bidder. However, the Department of Administrative Services reserves the right to consider any such Bidder-proposed (Contractor's Alternate) alternate designs or materials with the low successful Bidder, after the low successful Bidder is determined in the manner described above (A and B).

D. Notice of Intent to Award the Bid(s) will be sent to all Respondents submitting a timely Bid and may be posted at the website shown on the RFB cover sheet. Negotiation and execution of the Contract(s) shall be completed no later than fifteen (15) days from the date of the Notice of Intent to Award or such other time as designated by Agency. If the successful Bidder fails to negotiate and deliver an executed Contract, including all required documents such as payment and performance bonds and insurance certificate, by that date, the Agency, in its sole discretion, may cancel the award and award the Contract to the remaining Bidder the Agency believes will provide the best value to the State.

3.020 PREFERENCE

A. By virtue of statutory authority, a preference shall be given to Iowa domestic labor, products produced and provisions grown within the state of Iowa, in accordance with the provisions of Chapter 73, Code of Iowa and any amendments thereto.

B. Enforcement of reciprocal resident bidder preference and resident labor force preference codified at Iowa Code Section 73A.21.

1. NOTICE: Failure on the part of the bidder to carefully read the following paragraphs and to provide the information requested below may make the bidder's bid materially nonresponsive and therefore ineligible for contract award. Violations of Iowa Code Section 73A.2l may, among other things, result in civil penalties assessed by the Commissioner of the Division of Labor of Iowa Workforce Development. The bidder should seek out the advice of an attorney if he or she has questions about Iowa Code Section 73A.21. As a part of the competitive procurement of contracts for Public Improvements that must be awarded to the low bidder (if the bid is responsive and the bidder is deemed responsible), Public Bodies shall allow a preference to Resident Bidders if a Nonresident Bidder places a bid for the contract for the Public Improvement and that Nonresident Bidder's state or foreign country gives resident bidders of that state or foreign country a preference (including a labor force preference or any type of preferential treatment). The preference allowed, or reciprocally applied, shall be equal to the preference given or required by the state or foreign country in which the Nonresident Bidder is a resident bidder.
   "Public Body" means the State of Iowa (and its agencies) and any of its political subdivisions, including school districts, public utilities, and the state board of regents.
   "Public Improvement" means a building or other construction work to be paid for in whole or in part by the use of funds of the State of Iowa, its agencies, and any of its political subdivisions and includes road construction, reconstruction, and maintenance projects.
   "Resident Bidder" means a person or entity authorized to transact business in of the State of Iowa and having a place of business for transacting business within the State of Iowa at which it is conducting and has conducted business for at least three years prior to the date of the first advertisement for the public improvement. Note, however, that if a nonresident bidder's state or foreign country has a more stringent definition of a resident bidder, the more stringent definition is applicable as to bidders from that state or foreign country.
   "Nonresident Bidder" means a person or entity who does not meet the definition of a resident bidder.

C. Nonresident bidders shall be required to certify on the Bid submission, where so indicated, the state or foreign country in which the firm is a resident, and if that state or foreign country uses a percentage for in-state bidders and the amount of the preference.

D. If it is determined that this may cause denial of federal funds which would otherwise be available, or would otherwise be inconsistent with requirements of federal law, this section shall be

suspended, but only to the extent necessary to prevent denial of the funds or to eliminate the inconsistency with federal requirements.

3.021 QUALIFICATIONS

A. In accordance with Iowa Code 26.9(2) and 26.16, no potential bidder shall be required to provide confidential or proprietary information or meet any class requirements as a precondition to submitting a responsive bid. However, as noted in Iowa Code 26.9(2), the lowest responsive bidder may be required to provide additional information to verify responsibility prior to and as a condition of obtaining final award of the contract. Any qualification requirements contained in any bid document indicates only preferred qualifications, not a precondition to bid, and the lowest responsive bidder's qualifications will be evaluated individually based on all information provided.
B. The Owner may make such investigations as he or she deems necessary to determine the ability of the awarded Bidder to perform the required work, and the awarded Bidder shall furnish to the Owner all such information and data for this purpose. The Owner reserves the right to rescind any awarded Bid if the evidence submitted by, or in investigation of, such Bidder fails to satisfy the Owner that the Bidder is properly qualified to carry-out the obligations of the Contract and to complete the Work contemplated therein.
C. Bidders shall be registered as a Construction Contractor with the Labor Commissioner, Iowa Workforce Development Department, as required by Chapter 91C of the Code of Iowa. Bidder's Iowa Contractor Registration Number shall be included in the location provided in the Bid Form.
D. Non-resident corporations submitting bids must be in compliance with Section 490.1501 of the Code of Iowa and legally authorized thereby to carry-on such business in the State of Iowa as is required by the Contract Documents.
E. An out-of-state Bidder, if awarded a contract, will be required to submit evidence of authorization to do business in the State of Iowa.

3.022 INSURANCE

A. Insurance Requirements
   1. The Contractor shall maintain in effect, with insurance companies of recognized responsibility, at its expense, insurance covering its work of the type and in amounts required by this Contract. The Contractor's insurance shall, among other things, insure against any loss or damage resulting from the Contractor's performance of this Contract. All such insurance policies shall remain in full force and effect for the entire life of this Contract and shall not be canceled or changed except after thirty (30) days written notice to the Owner.
   2. **Amounts of Insurance Required – Refer to ConsensusDOCS 802 (see template in Project Manual)**
B. Certificates of Coverage
   1. Certificates of the insurance described above shall be submitted to the Owner before starting any construction activities and shall be subject to approval by the Owner. The Contractor shall provide certificates for the insurance required. The insurer shall state in the certificate that no cancellation of the insurance will be made without at least thirty (30) days prior written notice to the Contractor. Upon receipt of any notice of cancellation or alteration, Contractor shall within ten (10) days procure other policies of insurance, similar in all respects to the policy or policies, about to be canceled or altered, and, if the Contractor fails to provide, procure, and deliver acceptable policies of insurance, or satisfactory evidence thereof, in accordance with the terms hereof then, at the Owner's option, Owner may obtain such insurance at the cost and expense of Contractor, without the need of any notice to Contractor.
C. No Limitation of Liability
   1. Acceptance of the insurance certificates by the Owner shall not act to relieve the Contractor of any obligation under this Contract. All insurance policies and certificates shall be issued only by companies authorized to transact business in the State of Iowa. It shall be the

responsibility of the Contractor to keep the respective insurance policies and coverage's current and in force during the life of this agreement.

2. A Sample Certificate of Insurance is attached for reference following this Section.

3.023 FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

A. The Agreement for the Work will be written on ConsensusDOCS 802 Form of Agreement between Owner and Contractor (sample of the document with modifications incorporated is bound in this Project Manual).

3.024 EXECUTION OF CONTRACT

A. Contract documents shall mean and include the following:
   1. Contract: ConsensusDOCS 802
   2. Performance and Payment Bonds
   3. Project Manual
   4. Drawings
   5. Numbered Addenda issued after initial publication of Bid Documents
   6. Numbered Modifications (Change Orders) issued after Contract is signed

3.025 LAWS AND REGULATIONS

A. The Bidder's attention is directed to the fact that all applicable laws and regulations of Federal and State agencies having jurisdiction over the construction of this project shall apply to any contract resulting from this proposal, and it shall be deemed that those rules and regulations are made a part of such contract the same as if set forth in their entirety therein. By submitting a Bid, the Bidder confirms that he/she is familiar with and understands the Contractor's responsibility under all Federal and State of Iowa laws and regulations with respect to the Work described by the proposed Contract Documents.

3.026 CONTRACT DOCUMENTS AND ORDER OF PRECEDENCE

A. Where an irreconcilable conflict exists among Applicable Legal Requirements, this Contract, the specifications in the Materials and the Drawings, the earliest item mentioned in this sentence involving a conflict shall control over any later mentioned item or items subject to such conflict unless doing so would result in reducing the Bidder's duty of care or obligations under this Contract, in which case the terms resulting in the highest requirements for Bidder performance shall control.

3.027 CONDITIONS OF THE WORK

A. Each bidder must fully inform him/herself of the conditions under which the work is to be performed at the site of the work, the obstacles which may be encountered, and all other relevant matters concerning the work to be performed. Failure to do so will not relieve a successful bidder of the obligation to furnish all material and labor necessary to carry out the provisions of the contract. When a site visit is required by provisions located elsewhere in these Instructions to Bidders, as a site tour in conjunction with a mandatory Pre-Bid Meeting, it shall be the Bidder's responsibility to fulfill this obligation as a condition of bidding the Work described in the Bidding Documents.

B. No allowance will be made for any additional compensation by reason of any matter or condition with which the bidder might have fully informed him/herself, but failed to do so prior to bidding. Insofar as possible, the Contractor and all subcontractors shall employ such methods or means in carrying out the work so as not to cause any interruption of, or interference with, the work of any other subcontractor or trade.

3.028 SUBCONTRACTS

A. The Prime Contractor shall be responsible for notifying all subcontractors and suppliers and informing them that they are bound in each case by all applicable provisions of the bidding information and those of the proposed Form of Agreements as defined in the Contract Documents.

END OF SECTION

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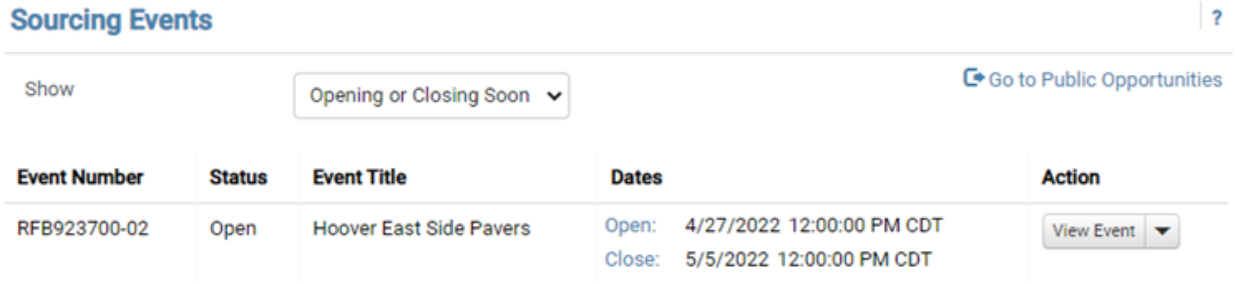
IMPACS Public Construction Bidders User Guide

Public construction bids must be submitted on-line at IMPACS Electronic Procurement System.

Bidders must be registered in IMPACS to submit a Bid.

To create an account, enter your email address and click on "Next" and click "Create Account". Bidder must enter all fields noted with * including legal company name, contact first and last name, phone number, confirm email address, password, re-enter password, select account recovery question including answer, confirm answer, select box accepting websites use terms and conditions and select security check box "I'm not a robot".

On the IMPACS Electronic Procurement System Customer Portal Home page, Bidder selects "View Event" in the Sourcing Events section.



Bidders can view event details including description, prerequisites, buyer attachments, questions and answers.

To submit a Bid, Bidder must select **"Yes, I intend to Bid"**. Bidder must complete the following sections.

Prerequisites - Bidder must complete all prerequisites.

- Bidder must upload a file of the Bid Security/Bond for 5% of total Bid Amount and certify that if they are awarded the construction contract, they will enter into the contract at the Bid Amount submitted.

- Bidder must upload the completed and signed Bid Form.
  NOTE: Bids are to be entered on the Bid Form only; not in the IMPACS. As a result, IMPACS will display a bid amount of $0.

Questions - Bidder must complete all questions.

Review & Submit - Bidder must select the certification box certifying that the statements and information in response are true and correct to the best of their knowledge and belief.

END OF SECTION

SAMPLE

ACORD

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): xx/xx/xxxx

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: Agent's Information
Agent's Name Agent's Address	PHONE (A/C, No, Ext): / FAX (A/C, No):
	E-MAIL ADDRESS:

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Company A (AM Best Rated A/VI or Better)	Admitted Carriers
INSURER B :	
INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

INSURED: Trade Contractor's Name, Trade Contractor's Mailing Address

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS (Minimum)	
* A	COMMERCIAL GENERAL LIABILITY CLAIMS-MADE [ ] OCCUR [X] GEN'L AGGREGATE LIMIT APPLIES PER: POLICY [ ] PRO-JECT [X] LOC [ ] OTHER:	X	X	#TBD- CGL	3/1/17	3/1/18	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ $ $1,000,000 $2,000,000 $1,000,000
B	AUTOMOBILE LIABILITY [X] ANY AUTO ALL OWNED AUTOS [ ] SCHEDULED AUTOS HIRED AUTOS [ ] NON-OWNED AUTOS	X	X	#TBD-AL	3/1/17	3/1/18	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000
C	UMBRELLA LIAB [X] OCCUR EXCESS LIAB [ ] CLAIMS-MADE DED [ ] RETENTION $	X	X	#TBD-UMB	3/1/17	3/1/18	EACH OCCURRENCE AGGREGATE	$10,000,000
D	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N [ ] N/A If yes, describe under DESCRIPTION OF OPERATIONS below		X	#TBD-WC	3/1/17	3/1/18	[X] PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $500,000 $500,000 $500,000
* E	Owners Contrators Protective Liability			#TBD-OCP	3/1/17	3/1/18	*Limits equal to CGL (or) as required by owner (Note- Would be either CGL or OCP, not both)	

amount varies based on paragraph 10.2.2 of the ConsensusDocs 802 contract

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

Additional Insured on a Primary & Non-Contributory basis (CGL;AL;UMB/Excess) in favor of : (Owner) Iowa Department of Administrative Services (DAS), Officers, Directors, Members, Consultants, Agents, and Employees.
Waiver of Subrogation (CGL;AL;WC/EL;UMB/Excess) in favor of: (Owner) Iowa Department of Administrative Services (DAS), Officers, Directors, Members, Consultants, Agents, and Employees.

Project 9223.00 (Number varies by project)

CERTIFICATE HOLDER

Iowa Department of Administrative Services (DAS)
109 SE 13th Street
Des Moines, IA 50319

CANCELLATION

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

AUTHORIZED REPRESENTATIVE

Signature

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SECTION 00 3101

GEOTECHNICAL SOILS INVESTIGATION REPORT

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Geotechnical Evaluation Report, Subsurface Exploration, prepared by Team Services.
   1) Report Dated April 12, 2022
   2) TEAM No. 1-5118

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

Geotechnical Evaluation Report

Subsurface Exploration
CCF Kitchen and Laundry Addition
Clarinda, Iowa

April 12, 2022

Prepared for:
DAS Iowa Department of Administrative Services
Facilities Management Center
109 SE 13th Street
Des Moines, IA 50319

Prepared by:
TEAM Services, Inc.
Des Moines, Iowa

TEAM Services
Geotech Report

April 12, 2022

DAS Iowa Department of Administrative Services
Facilities Management Center
109 SE 13th Street
Des Moines, IA 50319

Attn: Josh Herman

Re: Subsurface Exploration
CCF Kitchen and Laundry Addition
Clarinda, Iowa
TEAM Project No. 1-5118

Dear Mr. Herman:

We have completed the subsurface exploration for the proposed addition at the Clarinda Correctional Facility in Clarinda, Iowa. The accompanying geotechnical report presents the findings of the subsurface exploration and our recommendations concerning design and construction for the proposed addition.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service to you in any way, please do not hesitate to contact us.

Sincerely yours,
TEAM Services

Christopher Ostheimer
Staff Engineer

Clinton Halverson, P.E.
Principal Engineer

Cc: Jerry Dehnke – The Samuels Group



I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Clinton Halverson, P.E. License Number 19928 Date: 04/12/2022
My license renewal date is December 31, 2023.
Pages covered by this seal: All Pages.

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PROJECT INFORMATION

Project information was provided by Mr. Jerry Dehnke of The Samuels Group, Inc. through phone conversation and email with our office. Included with the emails was a site plan showing the proposed addition footprint and requested boring locations and depths. The project will consist of the construction of a new kitchen, laundry, and visitor center addition at the Clarinda Correctional Facility at 1800 North 16th Street in Clarinda, Iowa. The area where the addition is planned is currently a greenspace with a garden located in the southwest corner of the secured facility at the Clarinda Correctional Facility. The addition is planned to be approximately 18,600 square foot, slab-on-grade, and will connect to the existing facility with a circulation hallway. The addition is planned to have an at-grade loading dock with drive on the east side of the addition. Anticipated maximum loads of 3.5 kips per linear foot for continuous foundation and 100 kips for column loads were provided. At the time of this report a final finished floor elevation had not yet been decided.

SITE CONDITIONS

The project site is located at the Clarinda Correctional Facility at 1800 North 16th Street in Clarinda, Iowa. The site is currently a greenspace located in the southwest yard inside the perimeter fence of the correctional facility. The area where our borings were conducted gently sloped downhill to the southwest with approximately 3½ feet of elevation difference between our borings. Our truck-mounted auger drill rig was supported by the existing surfaces without difficulty.

FIELD EXPLORATION

A total of 4 borings were conducted at this site to depths of about 15 to 30 feet below existing grades on February 28, 2022. The borings were located and staked by The Samuels Group, Inc. prior to TEAM Services arriving at the site. The ground surface elevations at the boring locations were shot in the field using a surveying rod and scope and referenced the finished floor of the existing south wing as an elevation benchmark with an arbitrarily assigned elevation of 100.0 feet. The boring locations indicated on the attached Boring Plan are placed at their planned locations assuming field boring location staking matched planned locations. The benchmark location shown on the attached Boring Plan is based off visual approximations. The elevations are recorded on the respective Boring

Logs. The locations and elevations of the borings should be considered accurate only to the degree implied by the means and methods used to define them.

Our drilling equipment consisted of our truck-mounted auger drill rig. The borings were made by mechanically twisting a continuous flight hollow stem steel auger into the soil. At assigned intervals, the center drive bit of the auger was removed and soil samples were obtained.

Representative samples were obtained using thin-walled tube and split-barrel sampling procedures in general accordance with ASTM Specifications D-1587 and D-1586, respectively. In the thin-walled tube sampling procedure, a thin-walled, seamless steel tube with a sharp cutting edge is pushed hydraulically into the ground to obtain relatively undisturbed samples of cohesive or moderately cohesive soils. In the split-barrel sampling procedure, a standard 2-inch O.D. split-barrel sampling spoon is driven into the ground with a 140-pound 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 resistance value. These values are indicated on the Boring Logs at the depths of occurrence. The samples were tagged for identification, sealed and returned to the laboratory for testing and classification.

An automatic hammer was used to perform the Standard Penetration Tests in the borings at this site. In the automatic hammer system, the cathead and rope used traditionally in the manual test procedure is replaced with an automatic lifting mechanism for the 140 pound driving weight. The reduction in system friction with the automatic hammer system results in a significant increase in the driving energies. This results in significantly greater driving efficiencies and a corresponding decrease in the number of blows in the Standard Penetration Test results. We have taken the driving efficiency of the automatic hammer system into account when analyzing this data.

Field logs of the borings were prepared by the drill crew. These logs included visual classifications of the materials encountered during drilling, as well as the driller's interpretation of the subsurface conditions between samples. Final Boring Logs included with this report represent an interpretation of the field logs and include modifications based on laboratory observation and tests of the samples.

LABORATORY TESTING

Based on the driller's field records and examination of the samples in the laboratory, a soil testing program was developed to collect more information about the soil conditions at the site. The following is a brief description of the specific tasks completed for this project.

Natural Moisture Content -- The natural moisture content of selected samples was determined in general accordance with ASTM D 2216. The moisture content of the soil is the ratio, expressed as a percentage, of the weight of water in a given mass of soil to the weight of the soil particles. The results are presented on the Boring Logs at the depths from which the samples were obtained.

Unit Weight -- In the laboratory, selected undisturbed samples of the site soils were measured and weighed to determine gross weight and volume of the samples. Where possible, the samples are placed in a template and trimmed at each end to fit the template. The moisture content of each specimen was then determined, and the dry unit weight was calculated. The results of these tests are also presented on the Boring Logs at the appropriate sample depths.

Unconfined Compressive Strength -- A calibrated hand penetrometer was used to estimate the approximate unconfined compressive strength of select samples. The calibrated hand penetrometer has been correlated with unconfined compression tests and provides a better estimate of soil consistency than visual examination alone.

Plasticity (Atterberg Limits) Tests -- Selected soil samples were tested for Plastic Index. The soils' Plastic Index (PI) is bracketed by the Liquid Limit (LL) and the Plastic Limit (PL). The LL is the moisture content at which the soil will flow as a heavy viscous fluid. The PL is the moisture content at which the soil begins to crumble when rolled into a small thread. These tests are conducted in general accordance with ASTM D 4318. The results are indicated on the Boring Logs at the depth where the sample was obtained.

As part of the testing program, the samples were classified in the laboratory based on visual observation, texture and plasticity. The descriptions of the soils indicated on the Boring Logs are in accordance with the enclosed *General Notes* and the *Unified Soil Classification System*. Estimated group symbols according to the *Unified Soil Classification System* are given on the Boring Logs. A brief description of this classification system is attached to this report.

SUBSURFACE CONDITIONS

Subsurface conditions encountered during this exploration are indicated on the individual Boring Logs. Based on the results of the borings, subsurface conditions on the project site can be generalized as follows.

We encountered fill and possible fill at the ground surface in all borings. Possible fill is used to describe soil layers which may be natural but have a characteristic such as color or soil texture that raises suspicion that the soil could be fill. The fill and possible fill contained primarily lean clay, fat clay, and lean to fat clay. The existing fill and possible fill extended approximately 3 to 12 feet below existing surfaces.

Buried topsoil was encountered beneath the fill in Borings 1 and 3. Topsoil typically consisted of very stiff to hard fat clay with trace amount of organic material. The thickness of buried topsoil ranged from about 1½ to 3 feet when encountered.

Below the buried topsoil in Borings 1 and 3 and below the fill and possible fill in Borings 2 and 4, soil derived from loess (wind-blown soil) was encountered. The loess soils are typically medium stiff to stiff lean clay, stiff fat clay, and stiff to very stiff lean to fat clay in this area. Loess soils have typically not experienced significant overburden pressures beyond the weight of the soil above them; below the zone of soil affected by seasonal wet/dry cycles (where some preconsolidation by desiccation has occurred), the loess is often near-normally consolidated. The depth of the loess was about 8 and 12 feet below existing surfaces in Borings 4 and 1, respectively. Borings 2 and 3 terminated in the loess at depths of 15 to 20 feet below existing grades.

Glacially derived soils were encountered below the loess in Borings 1 and 4. These materials were deposited during the advance or retreat of continental glacial ice sheets which previously covered this area. The common glacial material consists of unsorted soil deposits with a mixture of sand, silt, and clay, with the engineering properties of the soil being controlled by the clay fraction. This material, termed glacial till, is commonly sandy lean clay. A layer with little or no sand was encountered amongst the glacial till in Boring 1. The sand-free clay soil appeared to be lean clay when encountered and is likely the result of sorting by meltwater streams. Soils deposited by meltwater streams are termed glacial outwash. The glacial till and outwash soils were typically stiff.

Paleosol was encountered as part of the glacially derived soils in Borings 1 and 4. Paleosol is a weathered zone of glacially derived soils that is commonly found at the top of a glacial stratum, however it was also encountered below glacial till and glacial outwash at this site. The paleosol at the site consisted of medium stiff to stiff lean to fat clay and very stiff fat clay. The various glacial soils extended to the terminal depths of Borings 1 and 4.

Cobbles and boulders were not noted in our borings. However, glacial soils were encountered at the site, and these materials often contain cobbles and boulders. The possibility of their presence should be considered where excavations or grading operations at the site advance into the glacial soils.

The above descriptions provide a general summary of the subsurface conditions encountered. The attached Boring Logs contain detailed information recorded at each boring location. These Boring Logs represent our interpretation of the field logs based on engineering examination of the field samples. The lines designating the interfaces between various strata represent approximate boundaries, and the transition between strata may be gradual. It should be noted that the soil conditions will vary between the boring locations.

GROUNDWATER CONDITIONS

The borings were monitored while drilling for the presence of groundwater. Groundwater levels observed in the borings are noted on the Boring Logs.

Groundwater seepage was encountered during drilling operations in Boring 1 at a depth of 24 feet below existing grade. Groundwater seepage was encountered immediately following drilling operations in Boring 1 at a depth of 20 feet below existing grade. No groundwater seepage was observed during or immediately after drilling in all other borings.

These groundwater level observations provide an approximate indication of the groundwater conditions existing on this site at the time of drilling operations. Fluctuation of groundwater levels can occur due to seasonal variations in the amount of rainfall, runoff, surface drainage, subsurface drainage, site topography, irrigation practices, ground cover (pavement or vegetation), and other factors not evident at the time the borings were conducted. Normally, the highest groundwater levels occur in late winter and spring time while the lowest levels occur in late summer and fall time. The fluctuation of the groundwater levels should be considered when developing the design and

construction plans for this project. Longer term monitoring in cased holes or piezometers would be required for a more accurate evaluation of the groundwater conditions at the site.

CONCLUSIONS AND RECOMMENDATIONS

Existing Fill Considerations

We encountered fill and possible fill at the ground surface in all borings. Possible fill is used to describe soil layers which may be natural but have a characteristic such as color or soil texture that raises suspicion that the soil could be fill. The fill and possible fill contained primarily lean clay, fat clay, and lean to fat clay. The existing fill and possible fill extended approximately 3 to 12 feet below existing surfaces. Based on visual observations and resistance to penetration the existing fill at the site appeared to be well compacted.

Man-made fills have an inherently high risk of variability, and careful construction inspection will be necessary to assure adequate foundation performance. Contract allowances should be made for some remedial work at the site related to foundation construction, including either overexcavation and backfilling of foundation excavations in accordance with the recommendations of this report or lowering of the foundation bearing elevations. The amount of such work cannot be defined at this time. The owner should be informed of these cost variables. Supporting foundations and slabs on undocumented fills carries with it a risk that undetected unsuitable materials may be buried within the fill that could cause distress to the planned structure. This risk can be reduced, but not eliminated, in a careful construction inspection program.

Expansive Soil Considerations

Moderately expansive fill, possible fill, loess and paleosol soils were encountered in our borings at the site. These expansive soils will experience volume changes with changes in soil moisture content. Therefore, foundations and floor slabs would be susceptible to swelling pressures that can cause movement, cracking, and structural distress when bearing just above or directly on these soils. To eliminate the risk associated with these expansive soils, it would be necessary to remove the expansive soils at the site and replace them with suitable, compacted and tested non-expansive engineered fill material. However, complete removal or treatment of these soils would be costly and it is our opinion that the following recommendations provide a more practical approach in dealing with the expansive soils encountered at this site. It should be noted that by implementing the

following recommendations, the potential movements are reduced to generally acceptable levels (less than 1 inch) but are not eliminated.

We recommend that a minimum of 24 inches of separation (buffer zone) should be provided between the bottom of floor slabs and the expansive soils. Where expansive soils are encountered within the buffer zone, we recommend that the expansive soils be overexcavated and replaced with suitable compacted and tested, low plasticity select cohesive fill soils or well-graded granular material, with at least 6% passing the No. 200 sieve, so that the minimum required separation can be provided beneath the slabs. Cleaner gravel gradations may be utilized where the gravel is part of a drainage system. The recommended buffer between the bottom of the floor slab and the expansive soils may include the proposed capillary break (detailed in the **Floor Slabs** section of this report). As an alternative, fly ash, cement or lime stabilization techniques can be considered for stabilizing the moderately expansive soils at the site. If chemical stabilization is desired, TEAM Services should be retained to perform additional laboratory testing to determine adequate quantities for stabilization. If a finished floor elevation similar to the existing buildings finished floor elevation is chosen, then overexcavation for expansive soil after topsoil stripping is expected to be minor.

The anticipated foundation loads should be high enough to resist the swelling pressures exerted by the moderately expansive soils. In our opinion, foundations may bear within or directly above the moderately expansive soils with no additional mitigation recommended, provided these soils meet the strength and stability requirements presented in the **Shallow Foundation Design** section of this report.

The contractor should avoid excessive drying of floor slab subgrade soils and foundation bearing soils during construction. If these soils experience drying then the dried soils should be removed, moisture conditioned, and properly compacted back into place or replaced with suitable new compacted fill material, prepared in accordance with the recommendations of this report. Measures to reduce drying of these soils include following excavation rapidly with foundation and floor slab construction, covering the site with moisture-proof plastic, and/or occasionally watering the subgrade soils during dry weather.

Placements of large bushes or trees within a horizontal distance from the building equal to about ½ the ultimate height of the bushes or trees should be avoided. Additionally, use of open bottom planters or excessive irrigation around the perimeter of the building should be avoided. As a protective measure, paving around the proposed addition with a sidewalk or planting a maintained

grass stand, with moderate irrigation during dry weather periods, is a suitable option for this site. Positive drainage should also be maintained around the addition.

Site Preparation

Site preparation should begin with the removal of any organic-laden soils, vegetation and any loose, soft or otherwise unsuitable materials. For planning purposes, we expect an average stripping depth of about 6 inches for undisturbed soil areas to remove root-zone soils. Existing fill may be removed if desired as discussed in the **Existing Fill Considerations** section of this report. Removal of the expansive soils should be conducted per the recommendations in the previous **Expansive Soils Considerations** section. The actual depths of stripping and overexcavation and replacement may vary and should be determined in the field in consultation with TEAM Services personnel. The site strippings and any near surface soils with organics could be used for landscaping purposes in non-critical areas where support for foundations, floor slabs and pavements is not required.

Any abandoned utility lines should be completely removed along with their associated backfill material and replaced with engineered compacted fill. Consideration should be given to rerouting any existing utilities which will remain in service to locations outside the planned building areas so that they will be easily accessible for maintenance.

The exposed grade in both cut and fill areas should be proofrolled and inspected by TEAM Services personnel. Proofrolling should be performed at the lowest cut grade, prior to fill placement. Proofrolling should be conducted with a fully loaded tandem axle dump truck having a minimum gross weight of 25 tons. Where proofrolling is not possible due to poor access or excessive disturbance to the existing soils, these soils should be probed and visually inspected by TEAM Services to determine the suitability of the subgrade. Any unsuitable soils identified during this process should be removed and replaced with suitable engineered compacted and tested fill which meets or exceeds the Class 1 Construction Application requirement in Table A in the following **Fill Placement** report section.

It should be noted that initial subgrade preparation for some soil types may not be suitable under repeated heavy construction vehicle loads and may require stabilization to greater depths or placement of crushed rock with or without geogrid. Stabilization of subgrade soils with fly ash, cement or lime could also be considered. Contract allowances should be made for some remedial

work at the site related to subgrade preparation. The amount of such work cannot be defined at this time. Therefore, the owner should be informed of these cost variables.

Fill Placement

Fill and backfill placed for support of the proposed structures should consist of approved materials which are free of organic matter and debris. Brick, concrete, rocks or other solid pieces with a maximum dimension of 3 inches or larger should not be placed in the newly placed fill sections. We recommend that low-plasticity cohesive soil or granular material be used for general fill placement. By our definition, low-plasticity cohesive soil would have a liquid limit of 43 or less and a plasticity index of 20 or less. In our opinion, the lean clay and sandy lean clay fill, loess, and glacial soils meet these requirements, however the lean to fat clay and fat clay fill, possible fill, buried topsoil, loess, and paleosol do not meet these requirements. Since it isn't likely feasible to separate the low plasticity minority of fill from the unsuitable majority and the lean loess and glacial soils are six feet or deeper below existing grades, a significant excavation would be required to source on-site soils for suitable fill for general fill placement. Fly ash, cement, or lime treatment options could lower the plasticity of existing moderately expansive materials. Moderately expansive soils could be used as new fill in open grass spaces and below the recommended buffer zone discussed in the **Expansive Soil Considerations** section of this report. Any off site potential borrow materials should be evaluated by TEAM Services prior to their use as engineered compacted and tested fill.

The following Table A lists recommended minimum compaction requirements for cohesive and cohesionless fill materials for specific applications. For low-plasticity (CL and ML) cohesive soils, moisture contents within a range of -2 to +3 percent of the material's optimum moisture content (as determined by Standard Proctor ASTM D 698) are necessary to achieve the desired fill qualities for general grading and utility backfill. Where allowed, moderately expansive soils should be placed within a range of 0 to +4 percent of the material's optimum moisture content. Granular materials with sufficient fines content to be moisture-sensitive should be placed within 3 percent of the material's optimum moisture content. Clean granular materials are not moisture sensitive.

The on-site soils can be excavated utilizing conventional excavation equipment. Granular soils can generally be suitably compacted with vibratory compaction equipment. Proper compaction of cohesive soils can be achieved with sheepsfoot or pneumatic type compactors within the above moisture content ranges. The soils should be placed in a maximum loose thickness of 12 inches and at a thickness compatible with the equipment being utilized. Sufficient density tests should be performed on each lift of engineered compacted fill placed to verify that adequate compaction is

achieved. Care should be taken to prevent unnecessary disturbance of subgrade soils. Disturbed areas should be removed and replaced with engineered compacted and tested fill in accordance with the recommendations of this report. Exposed sand surfaces can be recompacted if they become disturbed during excavation.

TABLE A
RECOMMENDED DEGREE OF COMPACTION GUIDELINES

Construction Application		Standard Proctor (ASTM D698) Cohesive Soil	Standard Proctor (ASTM D698) Cohesionless Soil [2]	Relative Density (ASTM D4253 & D4254) Cohesionless Soil [1,2]
Class 1	Subgrade preparation for foundations, slabs, pavement, and other critical backfill areas	95%	98%	70%
Class 2	Backfill adjacent to structures not supporting other structures or pavements. Minor subsidence possible.	90%	93%	45%
Class 3	Backfill in non-critical areas. Moderate subsidence possible.	85%	88%	20%

1. Use Relative Density technique (ASTM D4253 & D4254) where Standard Proctor technique (ASTM D698) does not result in a definable maximum dry density and optimum moisture content.
2. Clean gravel should be inspected visually during compaction by a qualified engineering technician to confirm adequate compactive effort and appropriate lift thicknesses in lieu of density testing.

Upon completion of the filling operation, care should be taken to maintain the subgrade moisture content prior to structure construction. If the subgrade should become desiccated, frozen or otherwise disturbed, the affected material should be removed or these materials should be scarified, moistened, recompacted and retested prior to concrete, asphalt, or new fill placement. As a general guideline, cohesive fills which dry to a moisture content less than 2/3 of their optimum moisture content as determined by the Standard Proctor Test (ASTM D 698) in their upper 2 inches are candidates for reconditioning as described above.

Shallow Foundation Design

It appears that foundations for the proposed buildings will bear on the existing fill, possible fill, buried topsoil, or loess, or on newly placed engineered fill required to achieve the desired final grades or to replace unsuitable soils. In our opinion, foundations bearing on existing fill, possible

fill, buried topsoil, or loess that is verified as suitable in the field or on newly placed engineered compacted and tested fill extending to suitable soils may be designed for a maximum net allowable bearing pressure of 2,000 pounds per square foot.

The net bearing pressure is the pressure in excess of the minimum adjacent overburden pressure at the foundation level. The bearing capacity discussed in the previous paragraph may be increased by 33% when considering transient forces such as wind. We estimate maximum settlements, due to the assumed structural loads, will be on the order of 1 inch and differential settlement may be on the order of 2/3 of the total settlement.

Continuous foundations should be adequately reinforced to limit deflections caused by non-uniform soil support characteristics. All perimeter foundations and foundations in unheated areas should extend at least 42 inches below the lowest adjacent finished grade for frost protection and reduce movements associated with changes in soil moisture content. Interior footings located in permanently frost-free environments should have at least 18 inches of protective embedment below lowest adjacent finished grade. Trench or augured excavations may not be appropriate for areas when sands or gravels are encountered within the excavation sidewalls. If sidewalls become unstable, sloped excavations or shored/cased excavations would be necessary.

Where future addition foundations are constructed adjacent to the existing structure's foundations, the proposed foundation bearing elevation should be the same as the existing structure's foundation bearing elevation. If unsuitable soils are present at this depth, then TEAM Services should be retained to develop recommendation to provide adequate foundation support without undermining the existing foundations. Architectural and structural connections should be designed to accommodate the potential differential settlement that may occur between the addition and the existing structure. Where new foundations are placed next to existing foundations, the differential settlement between the two would approach the total settlement expected for the new foundations.

Shallow Foundation Construction

We recommend that the base of all foundation excavations be observed and tested by the geotechnical engineer prior to placement of concrete. During this process, if soft, organic, or otherwise unsuitable materials are encountered at foundation elevations, we recommend that the foundations extend through the unsuitable soils and bear on undisturbed, suitable soils below or an overexcavation and replacement procedure be performed. The overexcavation and backfill

procedure would include removal of these unsuitable materials and replacement with suitable engineered compacted fill soils prepared in accordance with the recommendations in the **Fill Placement** section of this report. The following Figure 1 shows a typical cross-sectional view of this overexcavation and backfill procedure. Where sands are exposed which are not excessively wet; the sand can likely be compacted in-place to mitigate moderate surface disturbance.

In general, the overexcavation is widened 2/3 of a foot laterally on each side of the foundation per each foot of excavation that is below the foundation bearing elevation. The depth of overexcavation (shown as "D" in Figure 1) should be determined in consultation with the geotechnical engineer. Backfill materials should be suitable cohesive or granular soil, prepared and compacted in accordance with the recommendations in the **Fill Placement** section of this report. Another option would be to remove the unsuitable soils down to suitable soils and replace the excavated area with lean concrete (minimum 50 psi compressive strength), in which case widening of the excavation would not be required unless required due to unstable vertical sidewalls such as from sand.

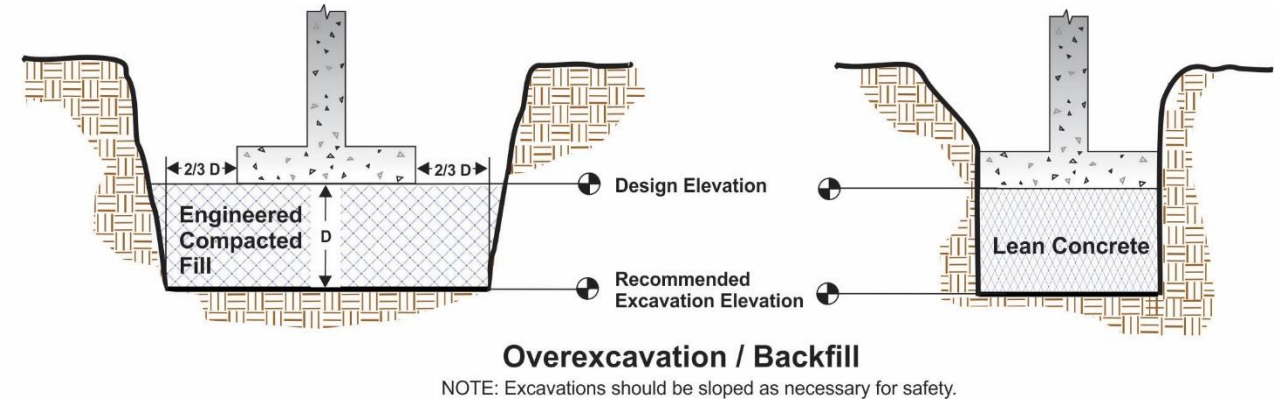


Figure 1.

Trench or augured excavations may not be appropriate for areas when sands or gravels are encountered within the excavation sidewalls. If sidewalls become unstable, sloped excavations or shored/cased excavations would be necessary.

Footing excavations should be kept free of water accumulation to prevent softening of subgrade soils and conducted in a manner which avoids disturbance of soils beneath existing foundations. Concrete should be placed as soon as possible after excavating to minimize bearing soil disturbance. Should the soils at bearing level become excessively dry, saturated, or otherwise disturbed; the affected soil should be removed prior to placing concrete.

Overexcavation Undermining Considerations

The sides of excavations can gradually or suddenly slough depending on the sidewall slope, soil type, groundwater influence, consistency of the soils, loads supported near the sides of the excavation, and other factors. To avoid undermining the soils supporting nearby structures, all excavations should ideally remain in the safe zone for excavation, illustrated in Figure 2. If excavations outside of the safe zone are desired and the owner does not wish to relocate the structure requiring overexcavation then there are options available to allow the excavation to continue. Underpinning the existing at-risk structure's foundations and slabs with helical piers or micropiles could be considered to completely support the structural elements in case of a sidewall failure. Another option would be to shore the sides of the excavation to allow a vertical cut, such as with a soldier or sheet pile style wall (which has been properly designed by a licensed structural engineer in consultation with TEAM Services). Generally, excavations extending beneath an existing structure are not feasible. Any nearby loading should be minimized during nearby overexcavation processes.

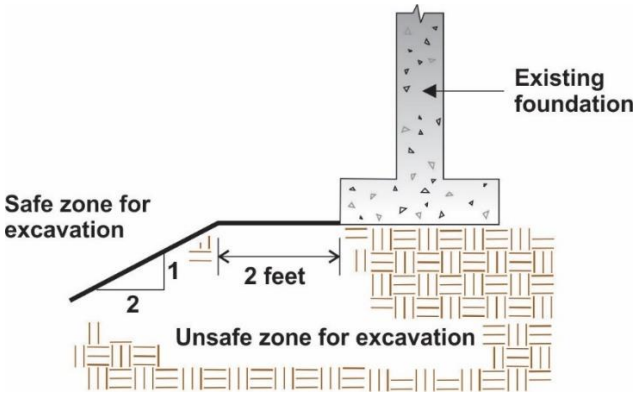


Figure 2.

Floor Slabs

Interior floor slabs can be adequately supported on a subgrade prepared in accordance with the **Existing Fill Considerations**, **Expansive Soil Considerations**, **Site Preparation** and **Fill Placement** sections of this report.

During building construction, the surface of the completed building pads may have been disturbed by construction equipment, etc. Therefore, it is recommended that the building areas be proofrolled or probed and tested where proofrolling cannot be conducted to delineate zones of soft soils present near the surface which may require additional removal or compaction prior to construction of the

floor slab. If the exposed subgrade has been disturbed since the original subgrade preparation, the subgrade should be scarified to a minimum depth of 9 inches, moisture conditioned (if needed), and recompacted to meet or exceed the Class 1 Construction Application requirement given in Table A in the **Fill Placement** section.

To avoid localized slab failures, it is important that interior backfill around foundations and in plumbing trenches be properly compacted. Therefore, all fill materials placed beneath the proposed floor slab are to meet or exceed the Class 1 Construction Application requirement given in Table A.

In order to allow successful use of a variety of floor systems, measures to control vapor transmission through the floor slab are recommended where moisture sensitive floor coverings are a possibility. This would include use of a vapor barrier/retarder with a minimum thickness of 10 mils placed between the slab and an underlying capillary break material. The vapor barrier/retarder should be strong enough to resist puncturing by the capillary break materials.

We recommend that the capillary break consist of clean manufactured sand or crushed limestone (drainable material). The capillary break should be at least 4 inches thick and contain less than 6 percent material finer than the U.S. No. 200 sieve. Floor slabs in areas not subject to frost action and floor slabs which are protected from frost action may be designed with a modulus of subgrade reaction of 150 pci when subgrade soils and capillary breaks are constructed in accordance with the recommendations of this report.

We recommend that continuous wire mesh reinforcement or a regular rebar schedule be provided for the floor slab and that crack control joints be sawn with a regular spacing not greater than about 10 feet. Unless columns are tied to slabs for structural support, we recommend isolation joints should be provided between the floor slabs and perimeter or interior foundations so that they can move independently without damage. These measures are taken with the intent of allowing the floor slab to deflect somewhat without experiencing large differential movements across slab joints and to channel the cracking of the floor slabs to the crack control joints so that they are not perceived as building distress.

Temporary Excavation Support

All excavations should comply with the requirements of OSHA 29 CFR, Part 1926, Subpart P, "Excavations and Trenches" and other applicable codes. This document states that excavation safety

is the responsibility of the contractor. Reference to this OSHA requirement should be included in the job specifications. The **Overexcavation Undermining Considerations** section of this report provides additional recommendations for safe excavations. Where these specifications differ, the most conservative recommendations should be adhered to.

Construction Dewatering

During construction activities, care should be taken to maintain positive drainage at the site to ensure that drainage is directed away from excavations. Based on the groundwater readings from the site, groundwater seepage is unlikely to be encountered during construction. However, seepage is possible when construction is performed during wet weather periods and/or where groundwater is anticipated to be high during construction. If seepage is encountered then we recommend that construction groundwater control be established prior to excavating the final 2 feet of soils. Groundwater seepage in cohesive soils can be provided by digging a system of trenches leading to a gravity outfall or temporary construction sumps to be pumped outside the perimeter of the excavations. Water bearing sand may be dewatered using a system of well points. Any ponded water should be removed as soon as possible.

Where seepage is observed, a granular working surface of at least 6 inches of clean, crushed concrete or limestone gravel may be useful to provide a firm working surface for constructing slabs or placing additional lifts of backfill. The clean gravel can be well compacted in the presence of water, will drive through and reinforce shallow (1 or 2 inches) cohesive soils which have become softened by water exposure or disturbance, and can accumulate water seepage to flow to a peripheral sump pit to be pumped away. If the granular working surface becomes completely embedded in any cohesive soils, a geotextile may need to be employed as separation between the granular material and cohesive soils.

If groundwater control is required but is lost during construction, disturbance of the upper few inches to few feet below grade is possible in the soils at the site. In these circumstances, it will be necessary to reestablish groundwater control and remove the disturbed soils. TEAM Services should be consulted regarding the extent of remedial action which is necessary.

Site Drainage

Positive site drainage should be maintained along the perimeters of the buildings. Final grades should be established to direct runoff away from building foundations. Down spouts, gutters, and roof drains should discharge away from building perimeters. Site grading should direct surface water away from excavations or completed foundations during construction and after site development is completed.

QUALIFICATION OF REPORT

Our evaluation of support conditions has been based on our understanding of the site and project information and the data obtained in our exploration. The general subsurface conditions utilized in our evaluation have been based on interpolation of subsurface data between the borings. In evaluating the boring data, we have examined previous correlations between soil properties and pressures observed in soil conditions similar to those at your site. The discovery of any site or subsurface conditions during construction which deviate from the data outlined in this exploration should be reported to us for our evaluation. The assessment of site environmental conditions or the presence of pollutants in the soil, rock, and groundwater of the site was beyond the scope of this exploration.

Support of structures on existing fill is discussed in this report. Existing fills are potentially much more inconsistent than natural soil deposits. Support of structures upon existing fills carries with it a degree of risk that unsuitable materials may be buried within the fill and not be detected in the inspection and testing program recommended herein. Unsuitable materials in the fill may experience settlement and cause distress to structures supported on the fill. Elimination of this risk requires removal of the fill. This is costly, and we believe that if construction inspections indicate that the fill is suitable then the risks at this site are low enough that the owner could reasonably accept this risk and keep the resultant savings.

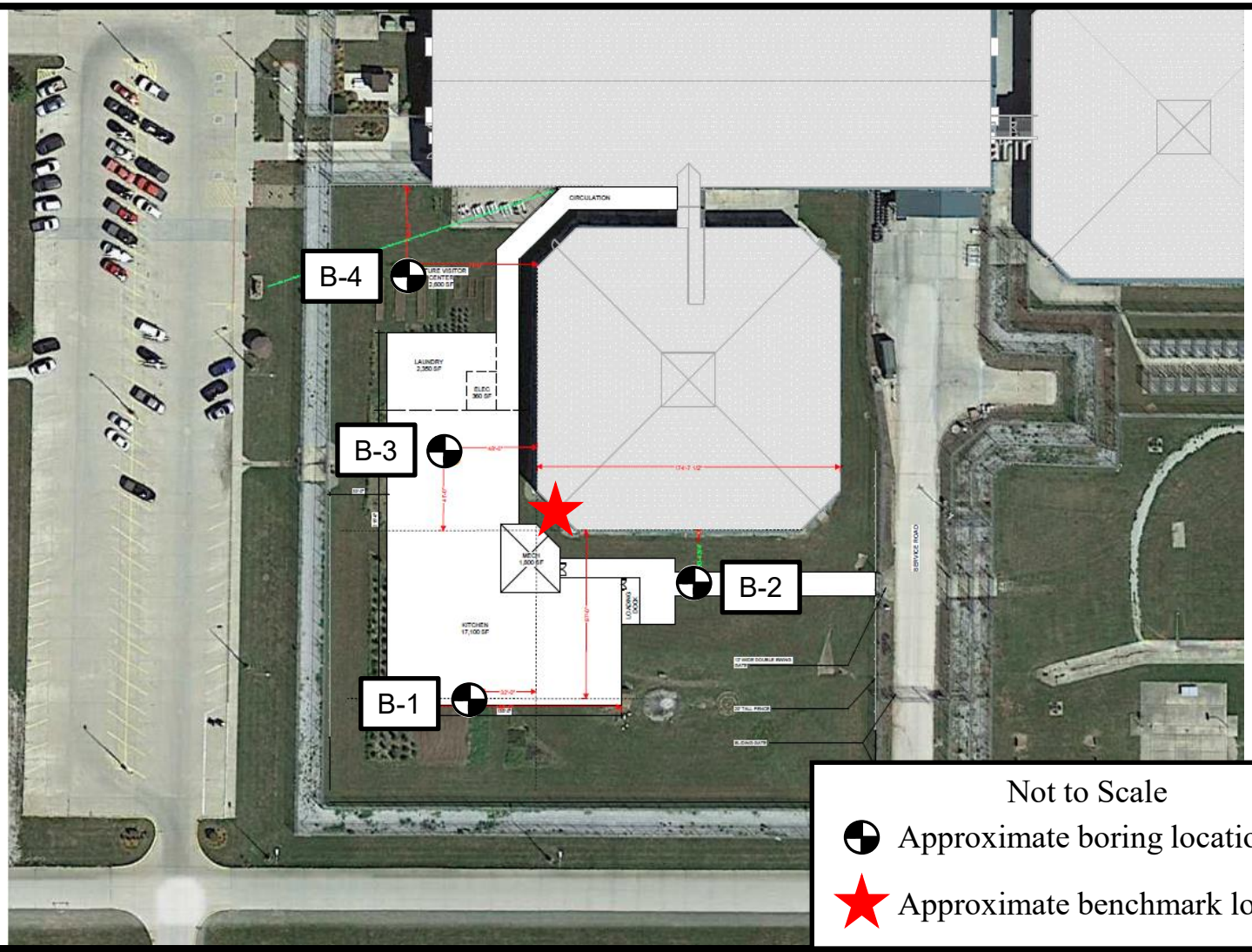
Potentially expansive soils were encountered in the borings at this site. These soils experience volume changes in response to soil moisture content changes. These volume changes can cause movement, cracking and other distress for structures supported above them. Measures to help reduce the degree of soil volume change have been discussed. These measures can reduce the risks associated with the potentially expansive soils, but they do not eliminate this risk. Elimination of the

risks associated with expansive soils would require complete removal of all expansive soils and replacement with a more suitable soil type or structurally suspending the planned building above the expansive soils. Neither of these measures is believed practical. A degree of risk must be accepted to support development at this site.

It is recommended that the geotechnical engineer be retained to review the plans and specifications so that comments can be provided regarding the interpretation and implementation of the geotechnical recommendations in the design and specifications. It is further recommended that the geotechnical engineer be retained for testing and observation during the foundation construction phase to help determine that the design requirements are fulfilled.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No other warranty is provided. In the event that any changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report modified or verified in writing by the geotechnical engineer.

Background Imagery Provided by The Samuels Group, Inc



Not to Scale

Approximate boring location

Approximate benchmark location

N

TEAM *Services*, Inc. **717 SE 6th Street** **Des Moines, IA 50309**	**CCF Kitchen and Laundry Addition** Clarinda, IA Boring Plan	Project No. 1-5118 April 8, 2022

BORING LOG No. 1

PROJECT CCF Kitchen and Laundry Addition

SITE Clarinda, IA

Approx. Surface Elevation (ft): 95.3
Site Datum: Existing Finished Floor (100.0')
Drilling Method: HSA

GRAPHIC LOG	DESCRIPTION	USCS SYMBOL	DEPTH (ft.)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES RECOVERY	SAMPLES SPT - N (BLOWS / FT.)	TESTS MOISTURE, %	TESTS DRY DENSITY (PCF)	TESTS UNCONFINED STRENGTH (PSF)	TESTS OTHER
	Fill - Lean CLAY, trace organics, very dark brown	CL	0	1	AS			26.1			
	1.5 / 93.8										
	Fill - Fat CLAY, gray, very dark gray and yellowish brown	CH		2	SS	10	FRZN**	20.2		7500*	
	3.0 / 92.3										
	Buried Topsoil - Fat CLAY, trace organics, very dark gray and dark yellowish brown, hard	CH		3	ST	6		22.1	101	9000*	
	6.0 / 89.3		5								
	Loess - Lean CLAY, gray and yellowish brown, stiff	CL		4	SS	14	6	27.8		2500*	
				5	ST	14		20.8	106	5000*	
	12.0 / 83.3		10								
	Glacial Till - Sandy lean CLAY, trace gravel, yellowish brown, gray and very dark gray, stiff	CL		6	SS	18	8	21.2		3500*	
	17.0 / 78.3		15								
	Glacial Outwash - Lean CLAY, gray, yellowish brown and brown, medium stiff	CL		7	SS	18	5	27.5		1000*	
	22.0 / 73.3		20								
	Paleosol - Lean to fat CLAY, dark yellowish brown, medium stiff	CL/ CH		8	SS	18	4	27.5		2000*	
	-- color changes to grayish brown and yellowish brown, becomes stiff after 27'		25								
	30.0 / 65.3			9	S	18	9	24.6		5000*	
	Bottom of Boring		30								

Notes: ** Sample noted as frozen during drilling operations

* Calibrated hand penetrometer

Hammer Type: Automatic

Water Level:

24 Ft. **While Drilling**

20 Ft. **After Drilling**

____ Ft.

TEAM Services
Geotechnical and Construction Material Consultants

Boring Started: 02/28/2022
Boring Completed: 02/28/2022
Rig: 112 **Foreman:** JH
Approved: **Job #:** 1-5118

1-5118.geo TSBORE16.fdt 5/16/2016

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES; IN-SITU, THE TRANSITION MAY BE GRADUAL.

BORING LOG No. 2

PROJECT CCF Kitchen and Laundry Addition

SITE Clarinda, IA

Approx. Surface Elevation (ft): 98.1
Site Datum: Existing Finished Floor (100.0')
Drilling Method: HSA

DESCRIPTION	USCS SYMBOL	DEPTH (ft.)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES RECOVERY	SAMPLES SPT - N (BLOWS / FT.)	TESTS MOISTURE, %	TESTS DRY DENSITY (PCF)	TESTS UNCONFINED STRENGTH (PSF)	TESTS OTHER
1.0 Fill - Lean CLAY, trace organics, very dark brown 97.1	CL	0	1	AS			38.1			
Fill - Fat CLAY, gray, very dark gray and yellowish brown	CH		2	SS	8	9	20.2		7000*	Atterberg Limits: LL = 51 PI = 28
			3	ST	8		23.6	96	4000*	
-- color changes to dark gray, very dark gray and yellowish brown after 6'		5	4	SS	10	9	21.5		5000*	
9.0 89.1										
Possible Fill - Lean to fat CLAY, dark gray and yellowish brown	CL/ CH	10	5	SS	12	11	27.8		2000*	
12.0 86.1										
Loess - Fat CLAY, gray and yellowish brown, stiff	CH		6	S	16	7	26.9		4000*	
15.0 83.1		15								
Bottom of Boring										

Notes:

* Calibrated hand penetrometer

Hammer Type: Automatic

Water Level:

NONE Ft. While Drilling

NONE Ft. After Drilling

Ft.

TEAM Services
Geotechnical and Construction Material Consultants

Boring Started: 02/28/2022
Boring Completed: 02/28/2022
Rig: 112 **Foreman:** JH
Approved: **Job #:** 1-5118

1-5118.geo TSBORE16.fdt 5/16/2016

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES; IN-SITU, THE TRANSITION MAY BE GRADUAL.

BORING LOG No. 3

PROJECT CCF Kitchen and Laundry Addition

SITE Clarinda, IA

Approx. Surface Elevation (ft): 97.5
Site Datum: Existing Finished Floor (100.0')
Drilling Method: HSA

DESCRIPTION	USCS SYMBOL	DEPTH (ft.)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES RECOVERY	SAMPLES SPT - N (BLOWS / FT.)	TESTS MOISTURE, %	TESTS DRY DENSITY (PCF)	TESTS UNCONFINED STRENGTH (PSF)	TESTS OTHER
1.0 Fill - Lean CLAY, trace organics, very dark brown 96.5	CL	0	1	AS			21.7			
Fill - Fat CLAY, gray, yellowish brown and very dark brown	CH		2	SS	8	4	20.4		6000*	
3.5 94.0										
5.0 Buried Topsoil - Fat CLAY, trace organics, very dark gray and dark yellowish brown, very stiff 92.5	CH		3	SS	12	12	23.7		9000*	
Loess - Fat CLAY, dark gray and yellowish brown, stiff	CH	5	4	ST	11		27	96	5000*	Atterberg Limits: LL = 57 PI = 33
8.5 89.0										
Loess - Lean CLAY, gray and yellowish brown, medium stiff	CL		5	SS	16	5	30.3		2000*	
		10								
			6	SS	18	5	28.3		2000*	
		15								
20.0 77.5			7	SS	18	4	24.4		1500*	
Bottom of Boring		20								

Notes:

* Calibrated hand penetrometer

Hammer Type: Automatic

Water Level:

NONE **Ft.** **While Drilling**

NONE **Ft.** **After Drilling**

_____ **Ft.** _____

TEAM Services
Geotechnical and Construction Material Consultants

Boring Started: 02/28/2022
Boring Completed: 02/28/2022
Rig: 112 **Foreman:** JH
Approved: **Job #:** 1-5118

1-5118.geo TSBORE16.fdt 5/16/2016

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES; IN-SITU, THE TRANSITION MAY BE GRADUAL.

BORING LOG No. 4

PROJECT CCF Kitchen and Laundry Addition

SITE Clarinda, IA

Approx. Surface Elevation (ft): 98.6
Site Datum: Existing Finished Floor (100.0')
Drilling Method: HSA

DESCRIPTION	USCS SYMBOL	DEPTH (ft.)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES RECOVERY	SAMPLES SPT - N (BLOWS / FT.)	TESTS MOISTURE, %	TESTS DRY DENSITY (PCF)	TESTS UNCONFINED STRENGTH (PSF)	TESTS OTHER
1.0 Fill - Fat CLAY, trace organics, very dark brown and yellowish brown 97.6	CH	0	1	AS			23.5			Atterberg Limits: LL = 50, PI = 24
Fill - Fat CLAY, brown, yellowish brown, very dark brown and gray 95.1 (3.5)	CH		2	SS	8	5	26.9		6000*	
Loess - Lean to fat CLAY, brown, stiff	CL/ CH		3	SS	6	5	26.4		2500*	
-- color changes to gray and brown, becomes very stiff after 5.5'		5	4	ST	14		24.5	101	5000*	
8.0 90.6										
Paleosol - Fat CLAY, gray, yellowish brown and brown, very stiff	CH		5	SS	18	12	23.2		6000*	
-- color changes to gray and yellowish brown after 12'		10	6	SS	16	12	23.7		8500*	
17.0 81.6		15								
Glacial Till - Sandy lean CLAY, gray and yellowish brown, stiff	CL		7	SS	18	7	21.2		3000*	
20.0 78.6		20								
Bottom of Boring										

Notes:

* Calibrated hand penetrometer

Hammer Type: Automatic

Water Level:

NONE Ft. While Drilling

NONE Ft. After Drilling

Ft.

TEAM Services
Geotechnical and Construction Material Consultants

Boring Started: 02/28/2022
Boring Completed: 02/28/2022
Rig: 112 **Foreman:** JH
Approved: **Job #:** 1-5118

1-5118.geo TSBORE16.fdt 5/16/2016

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL AND ROCK TYPES; IN-SITU, THE TRANSITION MAY BE GRADUAL.

UNIFIED SOIL CLASSIFICATION SYSTEM

TEAM Services Geotech Report

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 $1 > Cc > 3^E$		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 MH		GC	Clayey gravel[F, G, H]
	Sands 50% or more of coarse fraction passes No. 4 sieve	Clean Sands Less than 5% fines[E]	$Cu \leq 6$ and $1 \leq Cc \leq 3^E$		SW	Well-graded sand[I]
			$Cu < 6$ and/or $1 > Cc > 3^E$		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[J]		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-in. (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

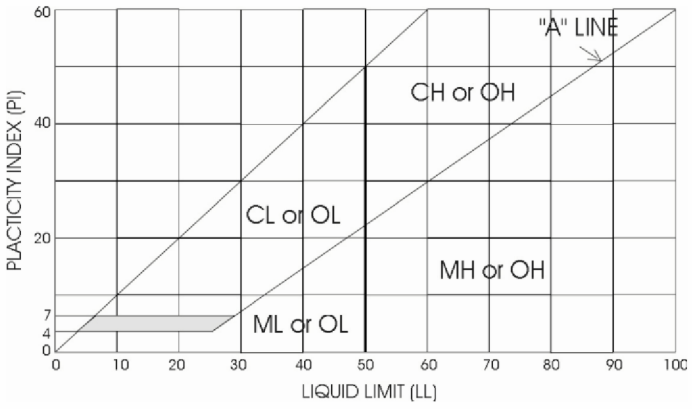
[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[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 > 15% gravel, add "with gravel" to group name.
[J] If Atterberg limits plots 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.

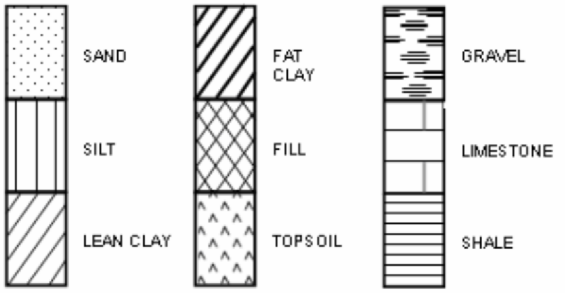
For classification of fine-grained soils and fine grained fraction of coarse-grained soils.

Equation of "A" Line:
Horizontal at PI = 4 to LL + 25.5.
then PI = 0.73 (LL-20)



GENERAL NOTES

TEAM Services
Geotech Report

SOIL and ROCK TYPES	DRILLING & SAMPLING SYMBOLS
	**SS** Split Spoon - 1 1/2" I.D., 2" O.D., unless otherwise noted **ST** Thin-Walled Tube - 3" O.D., unless otherwise noted **PA** Power Auger **HA** Hand Auger **DB** Diamond Bit - 4", N, B **AS** Auger Sample **HS** Hollow Stem Auger **WS** Wash Sample **RB** Rock Bit **BS** Bulk Sample **DC** Dutch Cone **WB** Wash Bore **AR** Air Rotary

STRENGTH TERMS

CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing No. 200 sieve)			RELATIVE DENSITY OF COARSE-GRAINED SOILS (50% or more retained No. 200 sieve)	
Consistency	**Unconfined Compressive Strength, Qu, psf**	**N-Blows/ft* (Approx. Correlation)**	**Relative Density**	**N-Blows/ft. ***
Very Soft	< 500	0 - 2	Very Loose	0 - 4
Soft	500 - 1,000	3 - 4	Loose	5 - 10
Medium	1,001 - 2,000	5 - 8	Medium Dense	10 - 29
Stiff	2,001 - 4,000	9 - 15	Dense	30 - 49
Very Stiff	4,001 - 8,000	16 - 30	Very Dense	50 - 80
Hard	8,001 - 16,000	31 - 50	Extremely Dense	80 +
Very Hard	> -16,000	50 +		

* Standard "N" Penetration Blows per foot of a 140 pound hammer falling 30 inches on a 2-inch OD split spoon, except where noted.

RELATIVE PROPORTIONS OF SAND AND GRAVEL		RELATIVE PROPORTIONS OF FINES		GRAIN SIZE TERMINOLOGY	
Descriptive Term(s) (of components also present in sample)	**Percent of Dry Weight**	**Descriptive Term(s) (of components also present in sample)**	**Percent of Dry Weight**	**Major Component of Sample**	**Size Range**
Trace	< 15	Trace	< 5	Boulders	Over 12 in. (300 mm)
With	15 - 29	With	5 - 12	Cobbles	12 in. to 3 in. (300 mm to 4.75 mm)
Modifier	> 30	Modifier	> 12	Gravel	3 in. to #4 sieve (75 mm to 4.75 mm)
WATER LEVELS:	WD = While Drilling AD = After Drilling			Sand	#4 to #200 sieve (4.75 mm to 0.075 mm)
▽	Depth groundwater first encountered during drilling			Silt or Clay	Passing #200 sieve (0.075 mm)
▼	Groundwater level after 24 hours (unless otherwise noted, i.e. "AD" -- after drilling)				

TERMS DESCRIBING SOIL STRUCTURE

Parting:	paper thin in size	Fissured:	containing shrinkage cracks, frequently filled with fine sand or silt, usually more or less vertical.
Seam:	1/8" to 3" in thickness		
Layer:	greater than 3" in thickness	Interbedded:	composed of alternate layers of different soil types.
Ferrous:	containing appreciable quantities of iron	Laminated:	composed of thin layers of varying color and texture.
Well-Graded:	having wide range in grain size and substantial amounts of all intermediate sizes.	Slickensided:	having inclined planes of weakness that are slick and glossy in appearance.
Poorly-Graded:	predominately one grain size or having a range of sizes with some intermediate sizes missing.	NOTE:	Clays possessing slickensided or fissured structure may exhibit lower unconfined strength than indicated above. Consistency of such soil is interpreted using the unconfined strength along with pocket penetrometer results.

SECTION 00 3113

PRELIMINARY SCHEDULE

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Preliminary Construction Schedule
B. Schedule Durations

1.02 PRELIMINARY SCHEDULE

A. A preliminary schedule has been identified by the Owner for the implementation of the Project. Refer to the schedule following this Section for references to anticipated milestones and construction duration.
B. Each step of the Preliminary Schedule is subject to receipt of acceptable bids, Owner's decision process and date of commencement.
C. A proposed construction schedule shall be submitted by all Trade Contractors to the Construction Manager no later than 48 hours prior to the pre-construction meeting. A revised Construction Schedule will be submitted by the Construction Manager once all preliminary schedules are reviewed and approved by the Owner.
D. The final construction schedule will be established post award of bids with the cooperation of all contractors.

1.03 SCHEDULE DURATIONS

A. Anticipated Notice of Intent to Award – 03/18/24
B. Anticipated Date of Commencement – 06/06/24
C. Substantial Completion by – 06/02/25

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

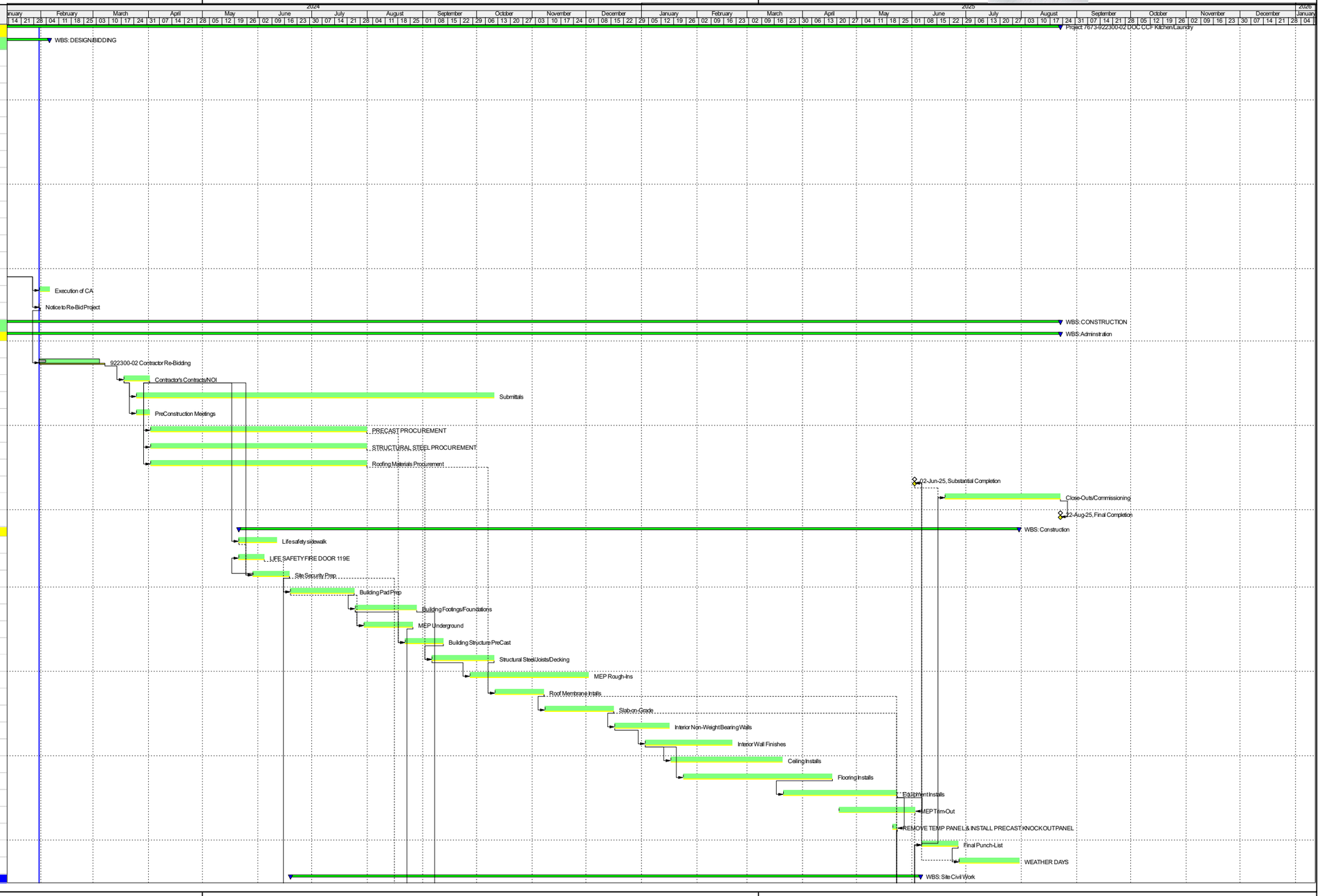
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IOWA | Department of Administrative Services

7673-9223.00 DOC CCF Kitchen/Laundry

Samuels Group

#	Activity ID	Activity	DUR	Planned Start	Predecessor	Planned Finish
1	Project: 7673-922300-02 DOC CCF Kitchen/La		966	01-Nov-21		22-Aug-25
2	WBS: DESIGN/BIDDING		574	01-Nov-21		05-Feb-24
3	DBPC1000	Designers Interviews	5	01-Nov-21		05-Nov-21
4	DBPC1010	Execution of Design Contract	2	08-Nov-21	DBPC1000	09-Nov-21
5	DBPC1020	Design Kick-Off Meeting	1	10-Nov-21	DBPC1010	10-Nov-21
6	DBPC1030	50% Schematic Development Check-In	25	11-Nov-21	DBPC1020	17-Dec-21
7	DBPC1040	100% Schematic Development Docs.	18	20-Dec-21	DBPC1030	13-Jan-22
8	DBPC1050	Schematic Review/Budget Update	14	02-Feb-22	DBPC1040	21-Feb-22
9	DBPC1055	Budget Recon.	98	03-Feb-22	DBPC1050	22-Jun-22
10	DBPC1060	50% Design Development Check-In	25	21-Jun-22	DBPC1055	26-Jul-22
11	DBPC1070	100% Design Development Docs.	25	27-Jul-22	DBPC1060	30-Aug-22
12	DBPC1100	50% Construction Docs.	0	21-Oct-22	DBPC1080	21-Oct-22
13	DBPC1110	100% Construction Docs.	9	21-Oct-22	DBPC1100	02-Nov-22
14	DBPC1080	Design Devlopment Review/Budget Update	10	02-Nov-22	DBPC1070	15-Nov-22
15	DBPC1120	100% Construction Docs.	0	05-Dec-22	DBPC1110	05-Dec-22
16	DBPC1130	Contractor Bidding	33	06-Dec-22	DBPC1120	19-Jan-23
17	DBPC1140	Execution of CA	4	31-Jan-24	DBPC1130	05-Feb-24
18	DBPC1150	Notice to Re-Bid Project	1	31-Jan-24	DBPC1130	31-Jan-24
19	WBS: CONSTRUCTION		689	06-Dec-22		22-Aug-25
20	WBS: Adminstration		689	06-Dec-22		22-Aug-25
21	CAA1000	922300-01 Contractor Bidding	33	06-Dec-22	DBPC1120	19-Jan-23
22	CAA1070	922300-02 Contractor Re-Bidding	27	31-Jan-24	DBPC1150	07-Mar-24
23	CAA1010	Contractor's Contracts/NOI	10	18-Mar-24	CAA1070	01-Apr-24
24	CAA1020	Submittals	140	25-Mar-24	CAA1010	10-Oct-24
25	CAA1030	PreConstruction Meetings	5	25-Mar-24	CAA1010	01-Apr-24
26	CAA1024	PRECAST PROCUREMENT	85	02-Apr-24	CAA1010	31-Jul-24
27	CAA1026	STRUCTURAL STEEL PROCUREMENT	85	02-Apr-24	CAA1010	31-Jul-24
28	CAA1028	Roofing Materials Procurement	85	02-Apr-24	CAA1010	31-Jul-24
29	CAA1040	Substantial Completion	0		CAC1110, CAC3000,	02-Jun-25
30	CAA1050	Close-Outs/Commissioning	46	19-Jun-25	CAA1040, CAC3000	22-Aug-25
31	CAA1060	Final Completion	0		CAA1050	22-Aug-25
32	WBS: Construction		301	21-May-24		30-Jul-25
33	CAC1012	Life safety sidewalk	15	21-May-24	CAA1010	11-Jun-24
34	CAC0099	LIFE SAFETY FIRE DOOR 119E	10	21-May-24	CAC1000	04-Jun-24
35	CAC1000	Site Security Prep	15	29-May-24	CAA1010, CAC1012	18-Jun-24
36	CAC1006	Building Pad Prep	25	19-Jun-24	CAC1000, CAC0099	24-Jul-24
37	CAC1010	Building Footings/Foundations	25	25-Jul-24	CAC1006	28-Aug-24
38	CAC1020	MEP Underground	20	30-Jul-24	CAC1006, CAC1010	26-Aug-24
39	CAC1030	Building Structure PreCast	15	22-Aug-24	CAA1024, CAC1010	12-Sep-24
40	CAC1040	Structural Steel/Joists/Decking	25	06-Sep-24	CAC1030, CAA1026	10-Oct-24
41	CAC1070	MEP Rough-Ins	45	27-Sep-24	CAC1040	02-Dec-24
42	CAC1050	Roof Membrane Installs	20	11-Oct-24	CAC1040, CAA1028	07-Nov-24
43	CAC1026	Slab-on-Grade	25	08-Nov-24	CAC1050	16-Dec-24
44	CAC1060	Interior Non-Weight Bearing Walls	20	17-Dec-24	CAC1026	16-Jan-25
45	CAC1080	Interior Wall Finishes	35	03-Jan-25	CAC1060	20-Feb-25
46	CAC1090	Ceiling Installs	45	17-Jan-25	CAC1080	20-Mar-25
47	CAC1100	Flooring Installs	60	24-Jan-25	CAC1080	17-Apr-25
48	CAC1110	Equipment Installs	45	21-Mar-25	CAC1100	23-May-25
49	CAC1120	MEP Trim-Out	30	21-Apr-25	CAC1110	02-Jun-25
50	CAC1115	REMOVE TEMP PANEL & INSTALL PRECAST KNOCKOUTPANEL	3	21-May-25	CAC1110	23-May-25
51	CAC3000	Final Punch-List	15	06-Jun-25	CAC1120, A1010,	26-Jun-25
52	CAC3010	WEATHER DAYS	23	27-Jun-25	CAC3000	30-Jul-25
53	WBS: Site Civil Work		243	19-Jun-24		05-Jun-25



Primary Baseline
Actual Work
Remaining Work
Critical Remaining Work
Start Constraint
Finish Constraint

Data Date 01.31.2024

TASK filter: All Activities

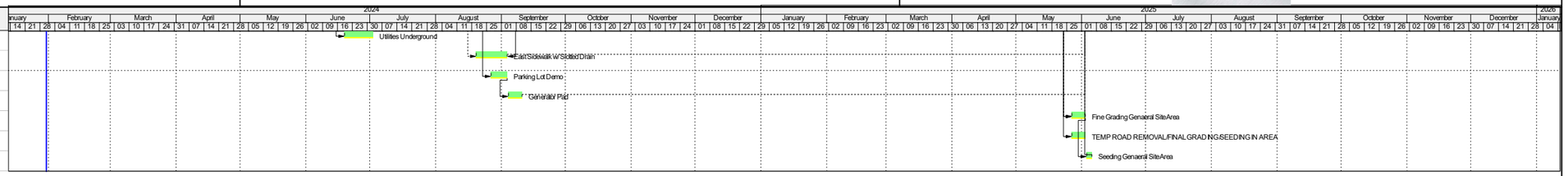
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IOWA | Department of Administrative Services

7673-9223.00 DOC CCF Kitchen/Laundry

Samuels Group

#	Activity ID	Activity	DUR	Planned Start	Predecessor	Planned Finish
54	A1030	Utilities Underground	10	19-Jun-24	CAC1000	02-Jul-24
55	A1020	East Sidewalk w/ Slotted Drain	10	20-Aug-24	CAC1000, CAC1010	03-Sep-24
56	A1000	Parking Lot Demo	5	27-Aug-24	CAC1020	03-Sep-24
57	A1010	Generator Pad	5	04-Sep-24	A1000	10-Sep-24
58	A1040	Fine Grading Genaeral Site Area	5	27-May-25	CAC1050, CAC1026,	02-Jun-25
59	A1060	TEMP ROAD REMOVAL/FINAL GRADING/SEEDING IN AREA	5	27-May-25	CAC1115	02-Jun-25
60	A1050	Seeding Genaeral Site Area	3	03-Jun-25	A1040	05-Jun-25



Primary Baseline
Actual Work
Remaining Work
Critical Remaining Work
Start Constraint
Finish Constraint

Data Date 01.31.2024

TASK filter: All Activities

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SECTION 00 3143

PERMIT APPLICATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Permit Application Information
B. Licenses, Permits, and Related Inspections

1.02 PERMIT APPLICATION INFORMATION

A. State Building Code Plan Review: The plan review and inspections for this project have been applied for by the Architect. Please contact your inspector prior to construction and occupancy.
B. State Building Code Energy Review: The energy code review and inspections for this project have been applied for by the Architect. Please contact your inspector prior to construction and occupancy.
C. Water Heater Permit and Inspections: Trade Contractor is responsible for permits and inspections.
D. Electrical Permit and Inspections: Trade Contractor is responsible for permits and inspections.
E. Other Applicable inspections: Trade Contractor is responsible for any other applicable project specific permits and inspections.

1.03 LICENSES, PERMITS, AND RELATED INSPECTIONS

A. Local authorities do not have jurisdiction for the permitting process for this project. Contact the Iowa State Fire Marshal Office and/or Iowa Workforce Development for information related to permits and inspections.
B. The Bidder shall comply with all codes, laws, ordinances, rules and regulations of any public authority having jurisdiction that bears on the performance of its work. All construction, materials and methods shall comply with the State Building Codes, except where plans and specifications establish a higher standard.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

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SECTION 00 4116

BID FORM

The Bid Form must be submitted online through the State's IMPACS Electronic Procurement System.

RFB 922300-02

BID FORM for CONSTRUCTION CONTRACT
for
Clarinda Correctional Facility (CCF)
2000 N. 16th St., Clarinda, Iowa 51632
Project 9223.00

Iowa Department of Administrative Services
Hoover State Office Building, Level 3
1305 East Walnut Street
Des Moines, Iowa 50319-0105

The following information is to be completed and submitted with your bid..

1. Bid Form - Completed and Signed (to be uploaded with bid submission)
2. Non Discrimination Clause Information
3. Contractor Targeted Small Business Enterprise Pre-Bid Contract Information
4. Bid Security – 5% of total Bid amount (to be uploaded with bid submission)

Authorized Representative:
The undersigned Bidder, in response to your Request for Bid for construction of the above project, having examined the Drawings, Specifications, and other Bidding Documents dated February 09, 2024, and Addenda issued and acknowledged below as received and being familiar with all the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials, equipment and supplies to perform all work to construct the project in strict accordance with the proposed Contract Documents, within the time and at the prices stated below. Prices are to cover all expenses incurred in performing the work required under the proposed Contract Documents, of which this bid is a part.

Bidder acknowledges receipt of the following Addenda which are a part of the Bidding Documents and for which any effect on cost of the Work is included in the bid amounts indicated:

Number _____ _____ _____ _____ _____

Dated _____ _____ _____ _____ _____

Note that the State of Iowa is exempt from State and Local sales and use taxes (including local option and school option) for this project. Taxes on construction materials shall NOT be included in the bid amounts.

Amounts shall be indicated in both words and figures. In case of discrepancy, the amount indicated in words shall govern.

BID PACKAGES:

Bid Package BP 01

Description: General Construction

Bidder proposes and agrees to perform all work as described in the Construction Documents for the sum of:

_____

_____ Dollars

($_____).

BP 01 Unit Price 01A

Description: Over Excavation and Backfill with Engineered Fill (1 Cubic Yard)

_____

_____ Dollars

($_____).

BP 01 Unit Price 01B

Description: Over Excavation and Backfill with Lean Concrete (1 Cubic Yard)

_____

_____ Dollars

($_____).

BP 01 Alternate NO. 1

Description: Laundry Equipment Opening Surrounds

Bidder proposes and agrees to perform all work as described in the Construction Documents for the sum of:

_____

_____ Dollars

($_____).

Bid Package BP 02

Description: Precast

Bidder proposes and agrees to perform all work as described in the Construction Documents for the sum of:

_____

_____ Dollars

($_____).

Bid Package BP 03

Description: EPDM Roofing/Gutters/Downspouts

Bidder proposes and agrees to perform all work as described in the Construction Documents for the sum of:

_____

_____ Dollars

($_____).

Bid Package BP 04

Description: Food Service

Bidder proposes and agrees to perform all work as described in the Construction Documents for the sum of:

_____

_____ Dollars

($_____).

BP 04 Alternate NO. 2

Description: Alternate Bakery Equipment Supply and Installation

Bidder proposes and agrees to perform all work as described in the Construction Documents for the sum of:

_____

_____ Dollars

($_____).

Bid Package BP 05

Description: Fire Suppression

Bidder proposes and agrees to perform all work as described in the Construction Documents for the sum of:

_____

_____ Dollars

($_____).

Bid Package BP 06

Description: Plumbing and HVAC

Bidder proposes and agrees to perform all work as described in the Construction Documents for the sum of:

_____

_____ Dollars

($_____).

BP 06 Alternate NO. 1

Description: Laundry Equipment Mechanical and Plumbing

Bidder proposes and agrees to perform all work as described in the Construction Documents for the sum of:

_____

_____ Dollars

($_____).

BP 06 Alternate NO. 2

Description: Alternate Bakery Mechanical and Plumbing

Bidder proposes and agrees to perform all work as described in the Construction Documents for the sum of:

_____

_____ Dollars

($_____).

Bid Package BP 07

Description: Electrical

Bidder proposes and agrees to perform all work as described in the Construction Documents for the sum of:

_____

_____ Dollars

($_____)

BP 07 Alternate 01

Description: Laundry Equipment Electrical

Bidder proposes and agrees to perform all work as described in the Construction Documents for the sum of:

_____

_____ Dollars

($_____).

BP 07 Alternate 02

Description: Alternate Bakery Equipment Electrical

Bidder proposes and agrees to perform all work as described in the Construction Documents for the sum of:

_____

_____ Dollars

($_____).

Bid Package BP 08

Description: Civil

Bidder proposes and agrees to perform all work as described in the Construction Documents for the sum of:

_____

_____ Dollars

($_____).

BP 08 Unit Price 08A

Description: Over Excavation and Backfill with Engineered Fill (1 Cubic Yard)

_____

_____ Dollars

($_____).

Bidder hereby certifies that:

1. This bid is genuine and is not made in the interest of or on behalf of any undisclosed person, firm or corporation;
2. Bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid; Bidder has not solicited or induced any person, firm or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain any advantage over any other bidder or over the Owner.
3. Bidder hereby certifies that the Bidder is registered with the Iowa Labor Commissioner as a Contractor as required by Chapter 91C, Code of Iowa.
4. Bidder agrees to comply with all Federal and State Affirmative Action/Equal Employment Opportunity requirements concerning fair employment and will not discriminate between or among them by reason of race, color, religion, sex, national origin or physical handicap.
5. All construction under this Contract shall conform to the requirements of the *Iowa State Building Code*.
6. Bidder agrees that this bid shall remain valid and shall not be withdrawn for a period of thirty (30) calendar days after the date for receipt of bids.
7. Bidder agrees that if written notice of acceptance of this bid is mailed, emailed, or delivered to the undersigned within thirty (30) days after the date in which bids are due, or at any time thereafter before it is withdrawn, the undersigned will sign and return the Contract Agreement, prepared in accord with the Bidding Documents and this bid as accepted; and will also provide proof of insurance coverage and required surety bonds.
8. Bidder understands that the Owner reserves the right to reject any and all bids, and to waive irregularities or informalities and enter into a contract for the work, as the Owner deems to be in the best interest of the State.
9. Bidder understands that the Owner reserves the right to accept any, or no, Alternate Bid, if requested, and that the Alternate Bids may be considered in any order or combination, and the low Bidder shall be determined on the basis of the sum of the base bid and any Alternate(s) accepted.

Subcontractors:
The Trade Contractor must identify all Subcontractors and Suppliers within 48 hours of the published date and time for which bids must be submitted, in accordance with Iowa Code Section 8A311, as amended by House File 646 in 2011. Subcontractors and suppliers may not be changed without the approval of the Owner. Requests for changing a Subcontractor or supplier must identify the reason for the proposed change, the name of the new Subcontractor or supplier, and the change in the subcontractor or supplier price as a result of the change. Any reduction in subcontractor or supplier price as a result of the change, if the change is approved by the Owner, shall be deducted from the Trade Contract Price via a deductive Change Order. Any such changes, if approved by the Owner, which result in an increase in the Trade Contract Price shall be borne by the Trade Contractor.

Enforcement of Reciprocal Resident Bidder Preference, per Iowa Code 73A.21.

All bidders shall either check the box next to “Resident Bidder” or check the box next to “Nonresident Bidder” and by doing so and signing thereafter certifies and attests to the same. All information requested must be provided. Seek out the advice of an attorney if you have questions.

"Resident Bidder" means a person or entity authorized to transact business in of the State of Iowa and having a place of business for transacting business within the State of Iowa at which it is conducting and has conducted business for at least three years prior to the date of the first advertisement for the public improvement. Note, however, that if a nonresident bidder's state or foreign country has a more stringent definition of a resident bidder, the more stringent definition is applicable as to bidders from that state or foreign country.

☐ Resident Bidder

Name of Resident Bidder: _____

By: _____
Authorized Agent and Signatory of Resident Bidder

OR:

☐ Nonresident Bidder

Name of Nonresident Bidder: _____

Name of State or Foreign Country of Nonresident Bidder: _____

Particularly identify and describe any preference, labor preference, or any other type of preferential treatment, in effect in the nonresident bidder's state or foreign country at the time of this bid:
_____
_____
_____

NOTICE: Nonresident Bidders domiciled in a state or country with a resident labor force preference shall make and keep, for a period of not less than three years, accurate records of all workers employed on the public improvement. The records shall include each worker's name, address, telephone number when available, social security number, trade classification, and the starting ending time of employment.

By: _____
Authorized Agent and Signatory of Nonresident Bidder

Bid Form shall be signed by an officer of the company with authority to bind in a contract.
Notice of acceptance of this bid, or request for additional information by the Department of Administrative Services, may be addressed to the undersigned at the address set forth below:

Legal Name of Firm: _____

Date: _____

Signature of Bidder: _____

Title: _____

Typed Name of Signatory: _____

Email: _____

Business Address:
_____
_____
_____

Telephone Number: _____ Fax Number: _____

Federal Tax Identification Number: _____

Iowa Contractor Registration Number: _____

Bidder Safety Manager Name:_____

For an out-of-state Bidder, Bidder certifies that the Resident Preference given by the State or

Foreign Country of Bidder's residence, _____, is _____ %.

END OF SECTION

SECTION 00 4116.01

NON-DISCRIMINATION CLAUSE

This Section is for informational purposes only. All information will be submitted online through the State's IMPACS Electronic Procurement System.

PART 1 - GENERAL

All contractors, subcontractors, vendors and suppliers of goods and services doing business with the State of Iowa and value of said business equals or exceeds $10,000 annually, agree as stated below.

1.01 NONDISCRIMINATION CLAUSE

A. The contractor, subcontractor, vendor and supplier of goods and services will not discriminate against an employee or applicant for employment because of race, creed, color, sex, national origin, ancestry, religion, economic status, age, disability, political opinion, or affiliations of an applicant or employee based upon the nature of the job occupation. The contractor, subcontractor, vendor and supplier will develop an Affirmative Action Program to insure that applicants are employed and that employees are treated during employment without regard to their race, creed, color, sex, national origin, ancestry, religion, economic status, age, disability, political opinions or affiliations. Such action shall include, but not be limited to the following:
   1. Employment.
   2. Upgrading.
   3. Demotion or transfer.
   4. Recruitment and advertising.
   5. Layoff or termination.
   6. Rates of pay or other forms of compensation.
   7. Selection for training, including apprenticeship.

B. The contractor, subcontractor, vendor and supplier of goods and services will, in all solicitations or advertisements for employees, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, sex, national origin, ancestry, religion, economic status, age, disability, political opinion or affiliations.

C. The contractor, subcontractor, vendor and supplier or their collective bargaining representative will send to each labor union or representative or workers with which they have a collective bargaining agreement or other contract or understanding, a notice advising the said labor union or workers' representative of the contractor's commitments under this section.

D. The contractor, subcontractor, vendor and supplier of goods and services will comply with all published rules, regulations, directives and orders of the State of Iowa Affirmative Action Program Contract Compliance Provisions.

E. The contractor, subcontractor, vendor and supplier of goods and services will furnish and file compliance reports within such time and upon such forms as provided by the Equal Employment Opportunity Officer, said forms may elicit information as to the policies, procedures, patterns, and practices of each subcontractor as state as the contractor themselves and said contractor, subcontractor, vendor and supplier will permit access to their employment books, records and accounts to the State's Equal Employment Opportunity Officer, for the purpose of investigation to ascertain compliance with this Contract and with rules regulations of the State's Affirmative Action Program.

F. In the event of the contractor's noncompliance with the nondiscrimination clauses of this Contract or with any of such rules, regulations and orders; this Contract may be canceled,

terminated or suspended in whole or in part and the Contractor may be declared ineligible for further contracts in accordance with procedures authorized by the State of Iowa.

G. The contractor, subcontractor, vendor and supplier of goods and services will include, or incorporate by reference, the provisions of the nondiscrimination clause in every contract, subcontract or purchase order unless exempted by the rules, regulations or orders of the State's Affirmative Action Program, and will provide in every subcontract or purchase order that said provisions will be binding upon each contractor, subcontractor or seller.

H. The parties agree to comply with "Compliance with the Law; Nondiscrimination in Employment" of the current Terms and Conditions at the award of this contract. Current Terms and Conditions may be found on the following web site and are, by this reference, made a part of this Agreement. https://das.iowa.gov/procurement/terms-and-conditions

I. We certify and recognize that we are morally and legally committed to nondiscrimination in employment. Any person who applies for employment with our company will not be discriminated against because of race, creed, color, sex, national origin, ancestry, religion, economic status, age or disabilities, unless disabilities are based upon the nature of the job occupation.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

SECTION 00 4116.02

TARGETED SMALL BUSINESS INFORMATION

This Section is for informational purposes only. All information will be submitted online through the State's IMPACS Electronic Procurement System.

PART 1 - GENERAL

1.01 TARGETED SMALL BUSINESS INFORMATION

A. Subcontractor Targeted Small Business Enterprise Pre-Bid Contact Information, including subcontractor and dollar amount to be subcontracted, is to accompany the Bid submission. Bidders shall comply with all affirmative action/equal opportunity provisions of State and Federal laws. The Owner seeks to provide opportunities for Targeted Small Businesses in accordance with the provisions of Chapter 73 of the Code of Iowa.

B. Search the Targeted Small Business Directory for certified State of Iowa Targeted Small Businesses.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

IOWA DEPARTMENT OF ADMINISTRATIVE SERVICES
SUBCONTRACTOR
TARGETED SMALL BUSINESS ENTERPRISE
PRE-BID CONTRACT INFORMATION

CONTRACTOR	**BID NO.**	**PAGE #**

(to be completed by bidder)

You are requested to provide the information on this form showing your targeted Small Business enterprises contacts made prior to your bid submission. This information is subject to verification and confirmation. NOTE: The Department of General Services will not regard your acceptance or use of a low quote or bid from a non-targeted Small Business Enterprise on any subcontract item as evidence itself of any lack of good faith effort to solicit targeted Small Business Enterprise subcontractors on this project. However, every effort shall be made to solicit quotes or bids on as many subcontractable items as necessary to evidence affirmative action in contracting.

TABLE OF INFORMATION SHOWING BIDDER'S PRE-BID TARGETED SMALL BUSINESS ENTERPRISE CONTACTS

SUBCONTRACTOR	TSB	DATES CONTACTED	QUOTES RECEIVED		QUOTATION USED IN BID	
			YES/NO	DATES	YES/NO	DOLLAR AMOUNT PROPOSED TO BE SUBCONTRACTED

Total dollar amount proposed to be subcontracted to TSB on this project $ _____
List items to be subcontracted. *(If more space is needed, use reverse side.)*

SECTION 00 4313

BID SECURITY FORMS

PART 1 - GENERAL

1.01 BID SECURITY FORMS

A. A Bid Bond form will be required on this project. An amended ConsensusDocs 262 is attached for reference following this page. ConsensusDocs bid bond form is not required (other standard forms are acceptable to the State of Iowa).

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION



CONSENSUSDOCS 262

BID BOND

(AMENDED BY STATE OF IOWA)

This document was developed through a collaborative effort of organizations representing a wide cross-section of the design and construction industry. The organizations endorsing this document believe it represents a fair allocation of risk and responsibilities for all project participants.

Endorsing organizations recognize that this document must be reviewed and adapted to meet specific needs and applicable laws. This document has important legal and insurance consequences. You are encouraged to consult legal, insurance and surety advisors before completing or modifying this document. The software includes a notes section indicating where information is to be inserted to complete this document. Further information and endorsing organizations' perspectives are available at www.consensusdocs.org/guidebook.

For Use with ConsensusDOCS 200, Standard Form of Agreement and General Conditions Between Owner and Constructor (Where the Contract Price is a Lump Sum) and ConsensusDOCS 500, Standard Agreement and General Conditions Between Owner and Construction Manager.

The Trade Contractor, _____ (the "Trade Contractor") has submitted a Bid to the Owner, _____, (the "Owner") for the _____ (the "Project") in accordance with the Bidding Documents, including Drawings and Specifications prepared by _____ (the "Design Professional").

IMPORTANT: A vertical line in the margin indicates a change has been made to the original text. Prior to signing, recipients may wish to request from the party producing the document a "redlined" version indicating changes to the original text. Consultation with legal and insurance counsel and careful review of the entire document are strongly encouraged.
ConsensusDOCS 262 • BID BOND Copyright © 2007, Revised 2009 and 2011, ConsensusDOCS LLC. AN INDIVIDUAL PURCHASE OF THIS DOCUMENT PERMITS THE USER TO PRINT ONE CONTRACT FOR ONE PROJECT ONLY. YOU MAY ONLY MAKE COPIES OF A COMPLETED DOCUMENT FOR DISTRIBUTION TO PARTIES IN DIRECT CONNECTION WITH THE SPECIFIC CONSTRUCTION PROJECT. ANY OTHER USES, INCLUDING COPYING THE DOCUMENT, ARE STRICTLY PROHIBITED.

By virtue of this Bid Bond (the "Bond"), the Constructor as Principal and _____ as Surety ("Surety"), are bound to the Owner as Obligee in the maximum amount _____, Dollars ($_____) (the "Bond Sum"). The Constructor and Surety hereby bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein.

1. If the Obligee shall accept the bid of the Constructor, the Constructor shall enter into an Agreement with the Obligee in accordance with the terms of such Bid.

2. Constructor shall procure such bond or bonds as are specified in the Contract Documents for the faithful performance of the Work and for the prompt payment of labor and materials furnished in the performance of the Work.

3. If the Constructor fails to enter such Agreement and give such bonds, the Constructor shall pay to the Obligee the difference between the amount of Constructor's bid and the amount of such agreement the Obligee in good faith executes with another Party to perform the Work covered by Constructor's Bid, not to exceed the Bond Sum stated above.

4. If the Constructor shall fulfill its obligation under Articles 1 through 3, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

This Bond is entered into as of _____ (date)

SURETY: _____ (seal)

BY: .....

Print Name: _____

Print Title: _____ (Attach Power of Attorney)

Witness: .....

(Additional signatures, if any, appear on attached page)

Constructor: _____ (seal)

BY: .....

Print Name: _____

Print Title: _____

Witness: .....

(Additional signatures, if any, appear on attached page)

IMPORTANT: A vertical line in the margin indicates a change has been made to the original text. Prior to signing, recipients may wish to request from the party producing the document a "redlined" version indicating changes to the original text. Consultation with legal and insurance counsel and careful review of the entire document are strongly encouraged.

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SECTION 00 5200

AGREEMENT FORM

PART 1 - GENERAL

1.01 AGREEMENT FORM

A. The Form of Agreement to be used on this project is a modified ConsensusDocs 802. A sample is attached following this page.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

ConsensusDocs 802

STANDARD FORM OF AGREEMENT BETWEEN OWNER AND TRADE CONTRACTOR

(Where the Construction Manager Is the Owner's Agent)



TABLE OF ARTICLES

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This Agreement has important legal and insurance consequences. Consultations with an attorney and with insurance and surety consultants are encouraged with respect to its completion or modification. Notes indicate where information is to be inserted to complete this Agreement.

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ARTICLE 1 AGREEMENT

This Trade Contractor Agreement is made effective as of the xx day of Month, Year , by and between the

OWNER

State of Iowa - DAS, Department of Administrative Services ("DAS"). DAS's principal office is located: 109 SE 13th Street, Des Moines, IA 50319-0120.

and the

TRADE CONTRACTOR
Contractor Name
Address
City, State, Zip

for work in connection with the following

PROJECT
XXXX.XX - Project Name

The CONSTRUCTION MANAGER is
Construction Manager Name
Address
City, State, Zip

The DESIGN PROFESSIONAL for the Project is
Designer Name
Address
City, State, Zip

Notice to the Parties shall be given at the above addresses.

ARTICLE 2 GENERAL PROVISIONS

2.1 RELATIONSHIP OF PARTIES The Owner and the Trade Contractor agree to proceed with this Agreement on the basis of mutual trust, good faith and fair dealing and shall cooperate with each other and with the Construction Manager and Design Professional in furthering the Owner's interests. The Trade Contractor shall use its diligent efforts to perform the work in an expeditious manner consistent with the Trade Contract Documents. The Owner and the Trade Contractor will endeavor to promote harmony and cooperation among all Project participants.

2.1.1 The Owner and the Trade Contractor shall perform their obligations with integrity, ensuring at a minimum that

2.1.1.1 conflicts of interest shall be avoided or disclosed promptly to the other Party; and

2.1.1.2 the Trade Contractor and the Owner warrant that they have not and shall not pay nor receive any contingent fees or gratuities to or from the other Party, including its agents, officers and employees, Subcontractors or others for whom they may be liable, to secure preferential

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treatment.

2.2 PROJECT ORGANIZATION This Agreement is for the performance of work described herein in connection with the construction of the Project. The Owner also may enter into separate agreements with other trade contractors for other portions of the Project. The Owner has entered or will enter into a Construction Management Agreement with the Construction Manager, and a design agreement with the Design Professional.

2.3 INDEPENDENT CONTRACTOR The Trade Contractor represents that it is an independent contractor and that its performance of the Trade Contract Work it shall act as an independent contractor. Neither Trade Contractor nor any of its agents or employees shall act on behalf of the Owner except as provided in this Agreement or unless authorized in writing by the Owner.

2.4 CONSTRUCTION MANAGER IS OWNER'S AGENT The Construction Manager will represent the Owner as its agent in the administration and management of this Agreement. Any instructions, reviews, approvals, orders or directions given to the Trade Contractor by the Construction Manager will be given on behalf of and as agent for the Owner. The Trade Contractor shall be obligated to respond or perform as if the same were given directly by the Owner. The Trade Contractor shall communicate and provide all requests and concerns regarding the Trade Contract Work to the Construction Manager. The Trade Contractor shall provide copies to the Construction Manager of all notices to the Owner required by and regarding this Agreement.

2.5 CONSTRUCTION MANAGER NOT IN PRIVITY WITH TRADE CONTRACTOR This Agreement shall not give the Trade Contractor any claim or right of action against the Construction Manager. The Trade Contractor and its subcontractors shall not be beneficiaries of any obligations of the Construction Manager. This Agreement shall not create a contractual relationship between any parties except the Owner and the Trade Contractor.

2.5A NO THIRD-PARTY BENEFICIARY There are no third-party beneficiaries of this Agreement.

2.6 DESIGN PROFESSIONAL The Owner, through its Design Professional, shall provide all architectural and engineering design services necessary for the completion of the Work, except the following:

No exceptions

The Trade Contractor shall not be required to provide professional services which constitute the practice of architecture or engineering except as otherwise provided in section 3.15.

2.6.1 The Owner shall obtain from the Design Professional either a license for Trade Contractor and Subcontractors to use the design documents prepared by the Design Professional or ownership of the copyrights for such design documents, and shall defend, indemnify and hold harmless the Trade Contractor against any suits or claims of infringement of any copyrights or licenses arising out of the use of the design documents. To the extent portions of this paragraph are in conflict with SF 396 (codified at Iowa Code Section 537A.5) said portions are void and unenforceable.

2.7 EXTENT OF AGREEMENT This Agreement is solely for the benefit of the Parties, represents the entire integrated agreement between the Parties, and supersedes all prior negotiations, representations and agreements, either written or oral. This Agreement and each and every provision is for the exclusive benefit of the Owner and the Trade Contractor and not for the benefit of any third party except to the extent expressly provided in this Agreement. In the event of conflict between this Agreement and any of the Exhibits or any other documents incorporated into this Agreement, the terms and provisions of this Agreement shall control.

2.8 DEFINITIONS

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2.8.1 Agreement means this ConsensusDocs 802 Standard Form of Agreement Between Owner and Trade Contractor (Where the Construction Manager is the Owner's Agent), as modified by the Parties, and Exhibits and Attachments made part of this Agreement upon its execution.

2.8.2 Design Professional means the Architect, Design Professional or Engineer identified in ARTICLE 1 and its consultants, retained by Owner to perform design services for the Project, and licensed in the State in which the Project is located. The use of the term Design Professional in this Agreement is for convenience and is not intended to imply or infer that the individual or entity named in ARTICLE 1 will provide design professional services in a discipline in which it is not licensed.

2.8.3 Construction Manager means the Construction Manager identified in ARTICLE 1 and its authorized representative.

2.8.4 The Construction Schedule is the document initially prepared by and updated by the Construction Manager and approved by the Owner that indicates proposed activity sequences, durations, or milestone dates for such activities as receipt and approval of pertinent information, issuance of the Construction Documents, the preparation and processing of shop drawings and samples, delivery of materials or equipment requiring long-lead-time procurement, Owner's occupancy requirements and estimated dates of Substantial Completion and Final Completion of the Project.

2.8.5 The term Day shall mean calendar day unless otherwise specifically defined.

2.8.6 Final Completion occurs on the date when the Trade Contractor's obligations under this Agreement are complete and accepted by the Owner and final payment becomes due and payable, as established in ARTICLE 6. This date shall be confirmed by a Certificate of Final Completion signed by the Owner and the Trade Contractor.

2.8.7 A Hazardous Material is any substance or material identified now or in the future as toxic or hazardous under any federal, state or local law or regulation, or any other substance or material which may be considered hazardous or otherwise subject to statutory or regulatory requirements governing handling, disposal or clean-up.

2.8.8 A Material Supplier is a person or entity retained by the Trade Contractor to provide material or equipment for the Trade Contract Work. This definition is not intended to, and shall not be interpreted to, expand or modify the definition(s) of materials or material suppliers contained in Iowa Code Chapter 573.

2.8.9 Others means other contractors, material suppliers, and persons at the Worksite who are not employed by the Trade Contractor or Subcontractors.

2.8.10 The term Overhead shall mean a) payroll costs and other compensation of Trade Contractor employees in the Trade Contractor's principal and branch offices; b) general and administrative expenses of the Trade Contractor's principal and branch offices including deductibles paid on any insurance policy and c) the Trade Contractor's capital expenses, including interest on capital used for the Work.

2.8.11 Owner is the person or entity identified in ARTICLE 1 as Owner, and includes the Owner's representative.

2.8.12 The Project, as identified in ARTICLE 1, is the building, facility or other improvements for which the Trade Contractor is to perform the Trade Contract Work.

2.8.13 A Subcontractor is a person or entity retained by the Trade Contractor as an independent contractor to provide the labor, materials, equipment or services necessary to complete a specific

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portion of the Work. This definition is not intended to, and shall not be interpreted to, expand or modify the definition(s) of materials or material suppliers contained in Iowa Code Chapter 573.

2.8.14 2.8.14 Per Iowa Code Section 26.13, "substantially completed" means the first date on which any of the following occurs:(1) Completion of the Project (or Trade Contract Work, in the case of the multiple Trade Contractors) or when the Project (or Trade Contract Work in the case of multiple Trade Contractors) has been substantially completed in general accordance with the terms and provisions of the contract. (2) The work on the Project (or Trade Contract Work in the case of multiple Trade Contractors) or on the designated portion is substantially completed in general accordance with the terms of the contract so that the State Iowa can occupy or utilize the Project or designated portion of the Project for its intended purpose. 3) The Project (or Trade Contract Work in the case of multiple Trade Contractors) is certified as having been substantially completed by either of the following: (a) the architect or engineer authorized to make such certification (which is defined in this Agreement as the Design Professional). (b) The authorized contract representative (which is defined in this Agreement as the Owner's Representative). (4) The State of Iowa is occupying or utilizing the Project (or Trade Contract Work in the case of multiple Trade Contractors) for its intended purpose. This subparagraph shall not apply to highway, bridge, or culvert projects.

2.8.15 Terrorism means a violent act, or an act that is dangerous to human life, property or infrastructure, that is committed by an individual or individuals and that appears to be part of an effort to coerce a civilian population or to influence the policy or affect the conduct of any government by coercion. Terrorism includes, but is not limited to, any act certified by the United States government as an act of terrorism pursuant to the Terrorism Risk Insurance Act, as amended.

2.8.16 A Trade Contract Change Order is a written order signed by the Owner and the Trade Contractor after execution of this Agreement, indicating changes in the scope of the Trade Contract Work, the Trade Contract Price or Trade Contract Time, including substitutions proposed by the Trade Contractor and accepted by the Owner. Trade Contract Change Orders shall be executed using the ConsensusDOCS 813 Trade Contract Change Order (CM as Owner's Agent) form document with exhibits attached as necessary.

2.8.17 The Trade Contract Documents consist of this Agreement (as modified), the drawings, specifications, addenda issued prior to execution of this Agreement, approved submittals, information furnished by the Owner under subsection 4.1.3, the bid documents, other documents listed in this Agreement and any modifications issued after execution.

2.8.18 The Trade Contract Price is the amount indicated in section 7.1 of this Agreement.

2.8.19 The Trade Contract Time is the period between the Date of Commencement and Final Completion.

2.8.20 Trade Contract Work means the construction and services provided by the Trade Contractor.

2.8.20.1 Changed Work means work that is different from the original scope of Trade Contract Work; or work that changes the Trade Contract Price or Trade Contract Time.

2.8.20.2 Defective Work is any portion of the Trade Contract Work that is not in conformance with the Trade Contract Documents.

2.8.21 The Trade Contractor is the person or entity identified in ARTICLE 1 and includes the Trade Contractor's Representative.

2.8.22 The term Work means the construction and services necessary or incidental to fulfill the Trade

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Contractors' obligations for the Project. The Work may refer to the whole Project or only a part of the Project.

2.8.23 Worksite means the geographical area at the location of the Project as identified in ARTICLE 1 where the Trade Contract Work is to be performed.

ARTICLE 3 TRADE CONTRACTOR'S OBLIGATIONS

3.1 GENERAL RESPONSIBILITIES

3.1.1 RESPONSIBILITIES The Trade Contractor shall provide all of the labor, materials, equipment and services necessary to complete the Trade Contract Work, all of which shall be provided in full accord with or as reasonably inferable from the Trade Contract Documents as being necessary to produce the indicated results.

3.1.2 The Trade Contractor shall be responsible for the supervision and coordination of the Trade Contract Work, including the construction means, methods, techniques, sequences and procedures utilized, unless the Trade Contract Documents give other specific instructions. In such case, the Trade Contractor shall not be liable to the Owner for damages resulting from compliance with such instructions unless the Trade Contractor recognized and failed to timely report to the Owner any error, inconsistency, omission or unsafe practice that it discovered in the specified constructionmeans, methods, techniques, safety, sequences or procedures.

3.1.3 The Trade Contractor shall perform Trade Contract Work only within locations allowed by the Trade Contract Documents, applicable permits and applicable local law.

3.2 COOPERATION WITH WORK OF OWNER AND OTHERS

3.2.1 The Owner may perform work at the Worksite directly or by Others. Any agreements with Others to perform construction or operations related to the Project shall include provisions pertaining to insurance, indemnification, waiver of subrogation, coordination, interference, clean up and safety which are substantively the same as the corresponding provisions of this Agreement.

3.2.2 In the event that the Owner elects to perform work at the Worksite directly or by Others, the Trade Contractor and the Owner shall, with the assistance of the Construction Manager, coordinate the activities of all forces at the Worksite and agree upon fair and reasonable schedules and operational procedures for Worksite activities. The Owner shall require each separate contractor to cooperate with the Trade Contractor and assist with the coordination of activities and the review of construction schedules and operations. The Trade Contract Price and Trade Contract Time shall be equitably adjusted, as mutually agreed by the Parties, for subsequent changes made necessary by the coordination of construction activities, and the Trade Contactor's construction schedule and the Construction Schedule shall be revised accordingly. The Trade Contractor, Owner and Others shall adhere to the revised Construction Schedule until it may subsequently be revised.

3.2.3 With regard to the work of the Owner and Others, the Trade Contractor shall (a) proceed with the Trade Contract Work in a manner which does not hinder, delay or interfere with the work of the Owner or Others or cause the work of the Owner or Others to become defective, (b) afford the Owner or Others reasonable access for introduction and storage of their materials and equipment and performance of their activities, and (c) coordinate the Trade Contractor's construction and operations with theirs as required by this section.

3.2.4 Before proceeding with any portion of the Trade Contract Work affected by the construction or operations of the Owner or Others, the Trade Contractor shall give the Owner and Construction

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Manager prompt written notification of any defects the Trade Contractor discovers in their work which will prevent the proper execution of the Trade Contract Work. The Trade Contractor's obligations in this section do not create a responsibility for the work of the Owner or Others, but are for the purpose of facilitating the Trade Contract Work. If the Trade Contractor does not notify the Owner and Construction Manager of patent defects interfering with the performance of the Trade Contract Work, the Trade Contractor acknowledges that the work of the Owner or Others is not defective and is acceptable for the proper execution of the Trade Contract Work. Following receipt of written notice from the Trade Contractor of defects, the Owner, through the Construction Manager, shall promptly inform the Trade Contractor what action, if any, the Trade Contractor shall take with regard to the defects.

3.3 RESPONSIBILITY FOR PERFORMANCE

3.3.1 In order to facilitate its responsibilities for completion of the Work in accordance with and as reasonably inferable from the Trade Contract Documents, prior to commencing the Work the Trade Contractor shall examine and compare the drawings and specifications with information furnished by the Owner pursuant to subsection 4.1.3, relevant field measurements made by the Trade Contractor and any visible conditions at the Worksite affecting the Trade Contract Work.

3.3.2 If in the course of the performance of the obligations in subsection 3.3.1 the Trade Contractor discovers any errors, omissions or inconsistencies in the Contract Documents, the Trade Contractor shall promptly report them to the Owner and Construction Manager. It is recognized, however, that the Trade Contractor is not acting in the capacity of a licensed design professional, and that the Trade Contractor's examination is to facilitate construction and does not create an affirmative responsibility to detect errors, omissions or inconsistencies or to ascertain compliance with applicable laws, building codes or regulations. Following receipt of written notice from the Trade Contractor of defects, the Owner shall promptly inform the Trade Contractor what action, if any, the Trade Contractor shall take with regard to the defects.

3.3.3 The Trade Contractor shall have no liability for errors, omissions or inconsistencies discovered under subsections 3.3.1 and 3.3.2 unless the Trade Contractor fails to report a recognized problem to the Owner and Construction Manager.

3.3.4 The Trade Contractor may be entitled to additional costs or time if there are changes in the scope of the Trade Contract Work that increase the cost of the Work or increase the number of days required to perform the Work, respectively, because of clarifications or instructions arising out of the Trade Contractor's reports described in the three preceding Subsections.

3.4 CONSTRUCTION PERSONNEL AND SUPERVISION

3.4.1 The Trade Contractor shall provide competent supervision for the performance of the Trade Contract Work. Before commencing the Trade Contract Work, Trade Contractor shall notify Owner and Construction Manager in writing of the name and qualifications of its proposed superintendent(s) and project manager so Owner and Construction Manager may review the individual's qualifications. If, for reasonable cause, the Owner or Construction Manager refuses to approve the individual, or withdraws its approval after once giving it, Trade Contractor shall name a different superintendent or project manager for Owner's and Construction Manager's review. Any disapproved superintendent shall not perform in that capacity thereafter at the Worksite.

3.4.2 The Trade Contractor shall be responsible to the Owner for acts or omissions of parties or entities performing portions of the Trade Contract Work for or on behalf of the Trade Contractor or any of its Subcontractors.

3.4.3 The Trade Contractor shall permit only qualified persons to perform the Trade Contract Work. The

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Trade Contractor shall enforce safety procedures, strict discipline and good order among persons performing the Trade Contract Work. If the Owner or Construction Manager determines that a particular person does not follow safety procedures, or is unfit or unskilled for the assigned work, the Trade Contractor shall immediately reassign the person on receipt of the Owner's or Construction Manager's written notice to do so.

3.4.4 TRADE CONTRACTOR'S REPRESENTATIVE The Trade Contractor's authorized representative is . The Trade Contractor's representative shall possess full authority to receive instructions from the Owner and to act on those instructions. The Trade Contractor shall notify the Owner and the Construction Manager in writing of a change in the designation of the Trade Contractor's representative. The Trade Contractor's representative is also authorized to bind the Trade Contractor in all matters relating to this Agreement including, without limitation, all matters requiring the Trade Contractor's approval, authorization, or written notice. The Trade Contractor's representative is also authorized to resolve disputes in accordance with Section 12.2 of this Agreement.

3.5 MATERIALS FURNISHED BY THE OWNER OR OTHERS

3.5.1 In the event the Trade Contract Work includes installation of materials or equipment furnished by the Owner or Others, it shall be the responsibility of the Trade Contractor to examine the items so provided and thereupon handle, store and install the items, unless otherwise provided in the Trade Contract Documents, with such skill and care as to provide a satisfactory and proper installation. Loss or damage due to acts or omissions of the Trade Contractor shall be the responsibility of the Trade Contractor and may be deducted from any amounts due or to become due the Trade Contractor. Any defects discovered in such materials or equipment shall be reported at once to the Owner and Construction Manager. Following receipt of written notice from the Trade Contractor of defects, the Owner shall promptly inform the Trade Contractor what action, if any, the Trade Contractor shall take with regard to the defects.

3.6 TESTS AND INSPECTIONS

3.6.1 The Trade Contractor shall schedule all required tests, approvals and inspections of the Trade Contract Work or portions thereof at appropriate times so as not to delay the progress of the Trade Contract Work or other work related to the Project. The Trade Contractor shall give proper notice to the Construction Manager and to all required parties of such tests, approvals and inspections. If feasible, the Owner and Others may timely observe the tests at the normal place of testing. Except as provided in subsection 3.6.3, the Owner shall bear all expenses associated with tests, inspections and approvals required by the Trade Contract Documents, which, unless otherwise agreed to, shall be conducted by an independent testing laboratory or entity retained by the Owner. Unless otherwise required by the Trade Contract Documents, required certificates of testing, approval or inspection shall be secured by the Trade Contractor and promptly delivered to the Owner and Construction Manager.

3.6.2 If the Owner, Construction Manager or appropriate authorities determine that tests, inspections or approvals in addition to those required by the Trade Contract Documents will be necessary, the Trade Contractor shall arrange for the procedures and give timely notice to the Owner, Construction Manager and Others who may observe the procedures. Costs of the additional tests, inspections or approvals are at the Owner's expense except as provided in subsection 3.6.3.

3.6.3 If the procedures described in subsections 3.6.1 and 3.6.2 indicate that portions of the Trade Contract Work fail to comply with the Trade Contract Documents, the Trade Contractor shall be responsible for costs of correction and retesting.

3.7 WARRANTY

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3.7.1 The Trade Contract Work shall be executed in accordance with the Trade Contract Documents in a workmanlike manner. The Trade Contractor warrants that all materials and equipment shall be furnished in sufficient quantities to facilitate the proper and expeditious execution of the Trade Contract Work and shall be new unless otherwise specified, of good quality, in conformance with the Trade Contract Documents, and free from defective workmanship and materials. At the Owner's or Construction Manager's request, the Trade Contractor shall furnish satisfactory evidence of the quality and type of materials and equipment furnished. The Trade Contractor further warrants that the Trade Contract Work shall be free from material defects not intrinsic in the design or materials required in the Trade Contract Documents. The Trade Contractor's warranty does not include remedies for defects or damages caused by normal wear and tear during normal usage, use for a purpose for which the Project was not intended, improper or insufficient maintenance, modifications performed by the Owner or Others, or abuse. The Trade Contractor's warranty pursuant to this section shall commence on the Date of Substantial Completion.

3.7.2 The Trade Contractor shall obtain from its Subcontractors and material suppliers any special or extended warranties required by the Trade Contract Documents. All such warranties shall be listed in an attached Exhibit to this Agreement.

3.8 CORRECTION OF TRADE CONTRACT WORK WITHIN ONE YEAR

3.8.1 If, prior to Substantial Completion and within one year after the date of Substantial Completion of the Trade Contract Work, any Defective Work is found, the Owner shall promptly notify the Trade Contractor in writing. Unless the Owner provides written acceptance of the condition, the Trade Contractor shall promptly correct the Defective Work at its own cost and time and bear the expense of additional services required for correction of any Defective Work for which it is responsible. If within the one-year correction period the Owner discovers and does not promptly notify the Trade Contractor or give the Trade Contractor an opportunity to test or correct Defective Work as reasonably requested by the Trade Contractor, the Owner waives the Trade Contractor's obligation to correct that Defective Work as well as the Owner's right to claim a breach of the warranty with respect to that Defective Work.

3.8.2 With respect to any portion of Trade Contract Work first performed after Substantial Completion, the one-year correction period shall be extended by the period of time between Substantial Completion and the actual performance of the later Trade Contract Work. Correction periods shall not be extended by corrective work performed by the Trade Contractor.

3.8.3 If the Trade Contractor fails to correct Defective Work within a reasonable time after receipt of written notice from the Owner prior to final payment, the Owner may correct it in accordance with the Owner's right to carry out the Trade Contract Work in section 11.2. In such case, an appropriate Trade Contract Change Order shall be issued deducting the cost of correcting such deficiencies from payments then or thereafter due the Trade Contractor. If payments then or thereafter due Trade Contractor are not sufficient to cover such amounts, the Trade Contractor shall pay the difference to the Owner.

3.8.4 If after the one-year correction period but before the applicable limitation period the Owner discovers any Defective Work, the Owner shall, unless the Defective Work requires emergency correction, promptly notify the Trade Contractor. If the Trade Contractor elects to correct the Defective Work, it shall provide written notice of such intent within fourteen (14) Days of its receipt of notice from the Owner. The Trade Contractor shall complete the correction of Defective Work within a time frame mutually agreed upon by the Trade Contractor and the Owner. If the Trade Contractor does not elect to correct the Defective Work, the Owner may have the Defective Work corrected by itself or Others and charge the Trade Contractor for the reasonable cost of the correction and other directly related

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expenses. Owner shall provide Trade Contractor with an accounting of correction costs it incurs.

3.8.5 If the Trade Contractor's correction or removal of Defective Work causes damage to or destroys other completed or partially completed Work or existing buildings, the Trade Contractor shall be responsible for the cost of correcting the destroyed or damaged property.

3.8.6 The one-year period for correction of Defective Work does not constitute a limitation period with respect to the enforcement of the Trade Contractor's other obligations under the Trade Contract Documents.

3.8.7 Prior to final payment, at the Owner's option and with the Trade Contractor's agreement, the Owner may elect to accept Defective Work rather than require its removal and correction. In such case the Contract Price shall be equitably adjusted for any diminution in the value of the Project caused by such Defective Work. Before the Owner accepts any such change it must be documented in writing with a Change Order signed by both the Trade Contractor and Owner.

3.9 CORRECTION OF COVERED TRADE CONTRACT WORK

3.9.1 On request of the Owner or Construction Manager, Trade Contract Work that has been covered without a requirement that it be inspected prior to being covered may be uncovered for the Owner's or Construction Manager's inspection. The Owner shall pay for the costs of uncovering and replacement if the Work proves to be in conformance with the Trade Contract Documents, or if the defective condition was caused by the Owner or Others. If the uncovered Trade Contract Work proves to be defective, the Trade Contractor shall pay the costs of uncovering and replacement.

3.9.2 If contrary to specific requirements in the Trade Contract Documents or contrary to a specific request from the Owner or Construction Manager, a portion of the Trade Contract Work is covered, the Owner or Construction Manager, by written request, may require the Trade Contractor to uncover the Trade Contract Work for the Owner's or Construction Manager's observation. In this circumstance the Trade Contract Work shall be uncovered and recovered at the Trade Contractor's expense and with no adjustment to the Trade Contract Time. Costs incurred by the Owner as a direct result of the above shall be deducted from the Trade Contract Price.

3.10 SAFETY OF PERSONS AND PROPERTY

3.10.1 SAFETY PRECAUTIONS AND PROGRAMS The Trade Contractor shall have overall responsibility for safety precautions and programs in the performance of the Trade Contract Work. While this section establishes the responsibility for safety between the Owner and Trade Contractor, it does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with the provisions of applicable laws and regulations.

3.10.2 The Trade Contractor shall seek to avoid injury, loss or damage to persons or property by taking reasonable steps to protect:

3.10.2.1 its employees and other persons at the Worksite;

3.10.2.2 materials and equipment stored at on-site or off-site locations for use in the Trade Contract Work; and

3.10.2.3 property located at the site and adjacent to Trade Contract Work areas, whether or not the property is part of the Trade Contract Work.

3.10.3 TRADE CONTRACTOR'S SAFETY REPRESENTATIVE The Trade Contractor's Worksite Safety Representative is who shall act as the Trade Contractor's authorized safety representative with a duty

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to prevent accidents in accordance with subsection 3.10.2 If no individual is identified in this section, the authorized safety representative shall be the Trade Contractor's Representative. The Trade Contractor shall report immediately in writing to the Owner and Construction Manager all recordable accidents and injuries occurring at the Worksite. When the Trade Contractor is required to file an accident report with a public authority, the Trade Contractor shall furnish a copy of the report to the Owner and Construction Manager.

3.10.4 The Trade Contractor shall provide the Owner and Construction Manager with copies of all notices required of the Trade Contractor by law or regulation. The Trade Contractor's safety program shall comply with the requirements of governmental and quasi-governmental authorities having jurisdiction.

3.10.5 Damage or loss not insured under property insurance which may arise from the Trade Contract Work, to the extent caused by the negligent acts or omissions of the Trade Contractor, or anyone for whose acts the Trade Contractor may be liable, shall be promptly remedied by the Trade Contractor.

3.10.6 If the Owner or Construction Manager deems any part of the Trade Contract Work or Worksite unsafe, the Owner or Construction Manager, without assuming responsibility for the Trade Contractor's safety program, may require the Trade Contractor to stop performance of the Trade Contract Work or take corrective measures satisfactory to the Owner, or both. If the Trade Contractor does not adopt corrective measures, the Owner may perform them and deduct their cost from the Trade Contract Price. The Trade Contractor agrees to make no claim for damages, for an increase in the Trade Contract Price or for a change in the Trade Contract Time based on the Trade Contractor's compliance with the Owner's or Construction Manager's reasonable request.

3.11 EMERGENCIES

3.11.1 In an emergency, the Trade Contractor shall act in a reasonable manner to prevent personal injury or property damage. Any change in the Trade Contract Price or Trade Contract Time resulting from the actions of the Trade Contractor in an emergency situation shall be determined as provided in ARTICLE 8.

3.12 HAZARDOUS MATERIALS

3.12.1 The Trade Contractor shall not be obligated to commence or continue Trade Contract Work until any Hazardous Material discovered at the Worksite has been removed, rendered or determined to be harmless by the Owner as certified by an independent testing laboratory and approved by the appropriate government agency.

3.12.2 If after the commencement of the Trade Contract Work a Hazardous Material is discovered at the Worksite, the Trade Contractor shall be entitled to immediately stop Trade Contract Work in the affected area. The Trade Contractor shall report the condition to the Owner, the Construction Manager, and, if required, the government agency with jurisdiction.

3.12.3 The Trade Contractor shall not be required to perform any Trade Contract Work relating to or in the area of Hazardous Material without written mutual agreement.

3.12.4 The Owner shall be responsible for retaining an independent testing laboratory to determine the nature of the Hazardous Material encountered and whether the material requires corrective measures or remedial action. Such measures shall be the sole responsibility of the Owner, and shall be performed in a manner minimizing any adverse effects upon the Trade Contract Work. The Trade Contractor shall resume Trade Contract Work in the area affected by any Hazardous Material only upon written agreement between the Parties after the Hazardous Material has been removed or rendered harmless

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and only after approval, if necessary, of the governmental agency with jurisdiction.

3.12.5 If the Trade Contractor incurs additional costs or is delayed due to the presence or remediation of Hazardous Material, the Trade Contractor shall be entitled to an equitable adjustment in the Trade Contract Price or the Trade Contract Time.

3.12.6 To the extent not caused by the negligent acts or omissions of the Trade Contractor, its Subcontractors and Sub-subcontractors, and the agents, officers, directors and employees of each of them, the Owner shall defend, indemnify and hold harmless the Trade Contractor, its Subcontractors and Sub-subcontractors, and the agents, officers, directors and employees of each of them, from and against any and all direct claims, damages, losses, costs and expenses, including but not limited to attorney's fees, costs and expenses incurred in connection with any dispute resolution process, to the extent permitted pursuant to section 6.6, arising out of or relating to the performance of the Trade Contract Work in any area affected by Hazardous Material. To the extent portions of this paragraph are in conflict with SF 396 (codified at Iowa Code Section 537A.5) said portions are void and unenforceable.

3.12.7 MATERIALS BROUGHT TO THE WORKSITE

3.12.7.1 Material Safety Data (MSD) sheets as required by law and pertaining to materials or substances used or consumed in the performance of the Trade Contract Work, whether obtained by the Trade Contractor, Subcontractors, the Owner or Others, shall be maintained at the Worksite by the Trade Contractor and made available to the Owner, Construction Manager, Subcontractors and Others.

3.12.7.2 The Trade Contractor shall be responsible for the proper delivery, handling, application, storage, removal and disposal of all materials and substances brought to the Worksite by the Trade Contractor in accordance with the Trade Contract Documents and used or consumed in the performance of the Trade Contract Work.

3.12.7.3 The Trade Contractor shall indemnify and hold harmless the Owner, Construction Manager, their agents, officers, directors and employees, from and against any and all claims, damages, losses, costs and expenses, including but not limited to attorney's fees, costs and expenses incurred in connection with any dispute resolution procedure, arising out of or relating to the delivery, handling, application, storage, removal and disposal of all materials and substances brought to the Worksite by the Trade Contractor in accordance or not in accordance with the Trade Contract Documents. To the extent portions of this paragraph are in conflict with SF 396 (codified at Iowa Code Section 537A.5) said portions are void and unenforceable.

3.12.8 The terms of this section shall survive the completion of the Trade Work or any termination of this Agreement.

3.13 SUBMITTALS

3.13.1 The Trade Contractor shall submit to the Construction Manager, and the Design Professional, for review and approval all shop drawings, samples, product data and similar submittals required by the Trade Contract Documents. Submittals may be submitted in electronic form if required in accordance with ConsensusDocs 200.2 and subsection 4.4.1. The Trade Contractor shall be responsible to the Owner for the accuracy and conformity of its submittals to the Trade Contract Documents. The Trade Contractor shall prepare and deliver its submittals in a manner consistent with the Construction Schedule and in such time and sequence so as not to delay the performance of the Trade Contract Work or the work of the Owner and Others. When the Trade Contractor delivers its submittals the Trade Contractor shall identify in writing for each submittal all changes, deviations or substitutions from the requirements of the Trade Contract Documents. The review and approval of any Trade Contractor

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submittal shall not be deemed to authorize changes, deviations or substitutions from the requirements of the Trade Contract Documents unless express written approval is obtained from the Owner specifically authorizing such deviation, substitution or change. To the extent a change, deviation or substitution causes an impact to the Contract Price or Contract Time, such approval shall be promptly memorialized in a Change Order. Further, the Construction Manager and Design Professional shall not make any change, deviation or substitution through the submittal process without specifically identifying and authorizing such deviation to the Trade Contractor. In the event that the Trade Contract Documents do not contain submittal requirements pertaining to the Trade Contract Work, the Trade Contractor agrees upon request to submit in a timely fashion to the Construction Manager and the Design Professional for review and approval any shop drawings, samples, product data, manufacturers' literature or similar submittals as may reasonably be required by the Owner, Construction Manager, or Design Professional.

3.13.2 The Owner shall be responsible for review and approval of submittals with reasonable promptness to avoid causing delay.

3.13.3 The Trade Contractor shall perform all Trade Contract Work strictly in accordance with approved submittals. Approval of shop drawings is not authorization to Trade Contractor to perform Changed Work, unless the procedures of ARTICLE 8 are followed. Approval does not relieve the Trade Contractor from responsibility for Defective Work resulting from errors or omissions of any kind on the approved Shop Drawings.

3.13.4 Record copies of the following, incorporating field changes and selections made during construction, shall be maintained by the Trade Contractor at the Project site and available to the Owner upon request: drawings, specifications, addenda, Trade Contract Change Order and other modifications, and required submittals including product data, samples and shop drawings.

3.13.5 No substitutions shall be made in the Trade Contract Work unless permitted in the Trade Contract Documents and then only after the Trade Contractor obtains approvals required under the Trade Contract Documents for substitutions. All such substitutions shall be promptly memorialized in a Change Order no later than seven (7) Days following approval by the Owner and, if applicable, provide for an adjustment in the Contract Price or Contract Time.

3.13.6 The Trade Contractor shall prepare and submit to the Construction Manager for submission to the Owner

(Check one only)

☒ final marked up as-built drawings

☐ updated electronic data, in accordance with ConsensusDocs 200.2 and section 4.4.1

☐ such documentation as defined by the Parties by attachment to this Agreement,

in general documenting how the various elements of the Trade Contract Work were actually constructed or installed.

3.14 PROFESSIONAL SERVICES

3.14.1 The Trade Contractor may be required to procure professional services in order to carry out its responsibilities for construction means, methods, techniques, sequences and procedures for such services specifically called for by the Contract Documents. The Trade Contractor shall obtain these professional services and any design certifications required from State of Iowa licensed design professionals. All drawings, specifications, calculations, certifications and submittals prepared by such

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design professionals shall bear the signature and seal of such design professionals and the Owner and the Design Professional shall be entitled to rely upon the adequacy, accuracy and completeness of such design services. If professional services are specifically required by the Contract Documents, the Owner shall indicate all required performance and design criteria. The Trade Contractor shall not be responsible for the adequacy of such performance and design criteria. The Trade Contractor shall not be required to provide such services in violation of existing laws, rules and regulations in the jurisdiction where the Project is located.

3.15 WORKSITE CONDITIONS

3.15.1 WORKSITE VISIT The Trade Contractor acknowledges that it has visited, or has had the opportunity to visit, the Worksite to visually inspect the general and local conditions which could affect the Trade Contract Work.

3.15.2 CONCEALED OR UNKNOWN SITE CONDITIONS If the conditions at the Worksite are (a) subsurface or other concealed physical conditions which are materially different from those indicated in the Trade Contract Documents, or (b) unusual and unknown physical conditions which are materially different from conditions ordinarily encountered and generally recognized as inherent in Trade Contract Work provided for in the Trade Contract Documents, the Trade Contractor shall stop Trade Contract Work and give immediate written notice of the condition to the Owner, Construction Manager and the Design Professional. The Trade Contractor shall not be required to perform any work relating to the unknown condition without the written mutual agreement of the Parties. Any change in the Contract Price or the Contract Time as a result of the unknown condition shall be determined as provided in this article. The Trade Contractor shall provide the Owner and the Construction Manager with written notice of any claim as a result of unknown conditions within the time period set forth in section 8.4.

3.16 PERMITS AND TAXES

3.16.1 Trade Contractor shall give public authorities all notices required by law and, except for permits and fees which are the responsibility of the Owner pursuant to section 4.2, shall obtain and pay for all necessary permits, licenses and renewals pertaining to the Trade Contract Work. Trade Contractor shall provide to Owner copies of all notices, permits, licenses and renewals required under this Agreement.

3.16.2 Trade Contractor shall pay all applicable taxes legally enacted when bids are received or negotiations concluded for the Trade Contract Work provided by the Trade Contractor.

3.16.3 The Contract Price or Contract Time shall be equitably adjusted by Trade Contract Change Order for additional costs resulting from any changes in laws, ordinances, rules and regulations enacted after the date of this Agreement, including increased taxes.

3.16.3 (Deleted)

3.17 CUTTING, FITTING AND PATCHING

3.17.1 The Trade Contractor shall perform cutting, fitting and patching necessary to coordinate the various parts of the Trade Contract Work and to prepare its Trade Contract Work for the work of the Owner or Others.

3.17.2 Cutting, patching or altering the work of the Owner or Others shall be done with the prior written approval of the Owner. Such approval shall not be unreasonably withheld.

3.18 CLEANING UP

3.18.1 The Trade Contractor shall regularly remove debris and waste materials at the Worksite resulting

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from the Trade Contract Work. Prior to discontinuing Trade Contract Work in an area, the Trade Contractor shall clean the area and remove all rubbish and its construction equipment, tools, machinery, waste and surplus materials. The Trade Contractor shall minimize and confine dust and debris resulting from construction activities. At the completion of the Trade Contract Work, the Trade Contractor shall remove from the Worksite all construction equipment, tools, surplus materials, waste materials and debris.

3.18.2 If the Trade Contractor fails to commence compliance with cleanup duties within two (2) business Days after written notification from the Owner or the Construction Manager of noncompliance, the Owner may implement appropriate cleanup measures without further notice and the cost shall be deducted from any amounts due or to become due the Trade Contractor in the next payment period.

3.19 ACCESS TO TRADE CONTRACT WORK The Trade Contractor shall facilitate the access of the Owner, Construction Manager, Design Professional and Others to Trade Contract Work in progress.

3.20 COST MONITORING The Trade Contractor shall provide the Construction Manager with cost monitoring information appropriate for the manner of Trade Contractor's compensation, to enable the Construction Manager to develop and track construction and project budgets, including amounts for work in progress, uncompleted work and proposed changes.

3.21 ROYALTIES, PATENTS AND COPYRIGHTS The Trade Contractor shall pay all royalties and license fees which may be due on the inclusion of any patented or copyrighted materials, methods or systems selected by the Trade Contractor and incorporated in the Trade Contract Work. The Trade Contractor shall defend, indemnify and hold the Owner harmless from all suits or claims for infringement of any patent rights or copyrights arising out of such selection. The Owner agrees to indemnify and hold the Trade Contractor harmless from any suits or claims of infringement of any patent rights or copyrights arising out of any patented or copyrighted materials, methods or systems specified by the Owner, Construction Manager and Design Professional. To the extent portions of this paragraph are in conflict with SF 396 (codified at Iowa Code Section 537A.5) said portions are void and unenforceable.

3.22 CONFIDENTIALITY The Owner shall treat as confidential information all of the Trade Contractor's estimating systems and historical and parameter cost data that may be disclosed to the Owner in connection with the performance of this Agreement if they are specified and marked as confidential and shall mark them. If a document is not marked as "Confidential" it will not be treated as such. Nothing contained herein, however, shall be interpreted in a manner that modifies or is in conflict with the purpose and application of the open records laws contained in the Code of Iowa.

ARTICLE 4 OWNER'S RESPONSIBILITIES

4.1 INFORMATION SERVICES

4.1.1 FULL INFORMATION Any information or services to be provided by the Owner shall be provided in a timely manner so as not to delay the Trade Contract Work.

4.1.2 FINANCIAL INFORMATION Upon the written request of the Trade Contractor, the Owner shall provide the Trade Contractor with evidence of Project financing. If requested in writing, evidence of such financing shall be a condition precedent to the Trade Contractor's commencing or continuing the Trade Contract Work. The Trade Contractor shall be notified by the Owner prior to any material change in Project financing.

4.1.3 WORKSITE INFORMATION Except to the extent that the Trade Contractor knows of any inaccuracy, the Trade Contractor is entitled to rely on Worksite information furnished by the Owner pursuant to this subsection. To the extent the Owner has obtained, or is required elsewhere in the

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Trade Contract Documents to obtain, the following Worksite information, the Owner shall provide at the Owner's expense and with reasonable promptness:

4.1.3.1 information describing the physical characteristics of the site, including surveys, site evaluations, legal descriptions, data or drawings depicting existing conditions, subsurface conditions and environmental studies, reports and investigations;

4.1.3.2 tests, inspections and other reports dealing with environmental matters, Hazardous Material and other existing conditions, including structural, mechanical and chemical tests, required by the Trade Contract Documents or by law; and

4.1.3.3 any other information or services requested in writing by the Trade Contractor which are relevant to the Trade Contractor's performance of the Trade Contract Work and under the Owner's control. The information required by subsection 4.1.3 shall be provided in reasonable detail. Legal descriptions shall include easements, title restrictions, boundaries, and zoning restrictions. Worksite descriptions shall include existing buildings and other construction and all other pertinent site conditions. Adjacent property descriptions shall include structures, streets, sidewalks, alleys, and other features relevant to the Trade Contract Work. Utility details shall include available services, lines at the Worksite and adjacent and connection points. The information shall include public and private information, subsurface information, grades, contours, and elevations, drainage data, exact locations and dimensions, and benchmarks that can be used by the Trade Contractor in laying out the Trade Contract Work. The Trade Contractor shall in writing request from the Owner any information identified in Paragraph 4.1.3 that the Trade Contractor believes the Owner has obtained but has not provided to the Trade Contractor.

4.1.3.4 OWNER'S REPRESENTATIVE The Owner's representative is test. The Owner's representative shall have authority to bind the Owner in all matters relating to this Agreement including, without limitation, all matters requiring the Owner's approval, authorization or written notice. If the Owner changes its representative as listed above, the Owner shall notify the Trade Contractor in advance in writing. The Owner's Representative is also authorized to resolve disputes in accordance with Section 12.2 of this Agreement. The Construction Manager, while unauthorized to modify the Agreement or settle a dispute without the Owner's approval, however, does have the requisite authority to act as the Owner's agent throughout the construction of the Project in accordance with the contract between the Owner and the Construction Manager (ConsensusDOCS 801 as modified by the State of Iowa).

4.2 BUILDING PERMIT, FEES AND APPROVALS Except for those permits and fees related to the Trade Contract Work which are the responsibility of the Trade Contractor pursuant to subsection 3.16.1, the Owner shall secure and pay for all other permits, approvals, easements, assessments and fees required for the development, construction, use or occupancy of permanent structures or for permanent changes in existing facilities, including the building permit.

4.3 Deleted

4.4 TRADE CONTRACT DOCUMENTS Unless otherwise specified, Owner shall provide One (1) copies of the Trade Contract Documents to the Trade Contractor without cost. Additional copies will be provided to the Trade Contractor at cost. This paragraph is not intended to be in conflict with Iowa Code Section 26.3 requirement that a sufficient number of copies of the contract documents be made available to bidders without charge (but a deposit not to exceed $250 per set may be required). If the Trade Contractor was required to make a deposit for a set of Trade Contract Documents for purposes of bidding then the Trade Contractor may elect to have the deposit returned instead of being provided with an additional copy.

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4.4.1 DIGITIZED DOCUMENTS If the Owner requires that the Owner, Design Professional, Construction Manager and Trade Contractor exchange documents and data in electronic or digital form, prior to any such exchange, the Owner, Design Professional, Construction Manager and Trade Contractor shall agree on a written protocol governing all exchanges in ConsensusDocs 200.2 or a separate Agreement, which, at a minimum, shall specify: (a) the definition of documents and data to be accepted in electronic or digital form or to be transmitted electronically or digitally; (b) management and coordination responsibilities; (c) necessary equipment, software and services; (d) acceptable formats, transmission methods and verification procedures; (e) methods for maintaining version control; (f) privacy and security requirements; and (g) storage and retrieval requirements. Except as otherwise agreed to by the Parties in writing, the Parties shall each bear their own costs as identified in the protocol. In the absence of a written protocol, use of documents and data in electronic or digital form shall be at the sole risk of the recipient.

4.5 OWNER'S CUTTING AND PATCHING Cutting, patching or altering the Trade Contract Work by the Owner or Others shall be done with the prior written approval of the Trade Contractor, which approval shall not be unreasonably withheld.

4.6 OWNER'S RIGHT TO CLEAN UP In case of a dispute between the Trade Contractor and Others with regard to respective responsibilities for cleaning up at the Worksite, the Owner may implement appropriate cleanup measures after two (2) business Days' notice and allocate the cost among those responsible during the following pay period.

4.7 COST OF CORRECTING DAMAGED OR DESTROYED WORK With regard to damage or loss attributable to the acts or omissions of the Owner or Others and not to the Trade Contractor, the Owner may either (a) promptly remedy the damage or loss or (b) accept the damage or loss. If the Trade Contractor incurs additional costs or is delayed due to such loss or damage, the Trade Contractor shall be entitled to an equitable adjustment in the Trade Contract Price or Trade Contract Time.

ARTICLE 5 SUBCONTRACTS

5.1 SUBCONTRACTORS The Trade Contract Work not performed by the Trade Contractor with its own forces shall be performed by Subcontractors.

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

5.2.0 The Trade Contractor must identify all Subcontractors and suppliers within 48 hours of the published date and time for which bids must be submitted, in accordance with Iowa Code Section 8A.311, as amended by House File 646 in 2011. Subcontractors and suppliers may not be changed without the approval of the Owner. Requests for changing a Subcontractor or supplier must identify the reason for the proposed change, the name of the new Subcontractor or supplier, and the change in the subcontractor or supplier price as a result of the change. Any reduction in subcontractor or supplier price as a result of the change, if the change is approved by the Owner, shall be deducted from the Trade Contract Price via a deductive Change Order. Any such changes, if approved by the Owner, which result in an increase in the Trade Contract Price shall be borne by the Trade Contractor.

5.2.1 If the Owner has a reasonable objection to any proposed subcontractor or material supplier, the Owner shall notify the Trade Contractor in writing.

5.2.2 If the Owner has reasonably and promptly objected as provided in subsection 5.2.1, the Trade Contractor shall not contract with the proposed subcontractor or material supplier, and the Trade Contractor shall propose another Subcontractor acceptable to the Owner. To the extent the substitution results in an increase or decrease in the Trade Contract Price or Trade Contract Time, an appropriate

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Trade Contract Change Order shall be issued as provided in ARTICLE 8.

5.3 BINDING OF SUBCONTRACTORS The Trade Contractor agrees to bind every Subcontractor (and require every Subcontractor to so bind its subcontractors) to all the provisions of this Agreement and the Trade Contract Documents as they apply to the Subcontractor's portion of the Trade Contract Work.

5.4 Deleted

5.5 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

5.5.1 If this Agreement is terminated, each subcontract agreement shall be assigned by the Trade Contractor to the Owner, subject to the prior rights of any surety, provided that:

5.5.1.1 this Agreement is terminated by the Owner pursuant to sections 11.3 or 11.4; and

5.5.1.2 the Owner accepts such assignment after termination by notifying the Subcontractor and Trade Contractor in writing, and assumes all rights and obligations of the Contractor pursuant to each subcontract agreement.

5.5.2 If the Owner accepts such an assignment, and the Work has been suspended for more than thirty (30) consecutive Days, following termination, if appropriate, the Subcontractor's compensation shall be equitably adjusted as a result of the suspension.

ARTICLE 6 TRADE CONTRACT TIME

6.1 PERFORMANCE OF THE TRADE CONTRACT WORK

6.1.1 DATE OF COMMENCEMENT The Date of Commencement is the date of Owner's written notice to proceed unless otherwise set forth below:

6.1.2 TIME Substantial Completion of the Trade Contract Work shall be achieved in XXX (XX) Days from the Date of Commencement. Unless otherwise specified in the Certificate of Substantial Completion, the Trade Contractor shall achieve Final Completion within 30 Days after the date of Substantial Completion, subject to adjustments as provided for in the Trade Contract Documents.

6.1.3 Time limits stated above are of the essence of this Agreement.

6.1.4 Unless instructed by the Owner in writing, the Trade Contractor shall not knowingly commence the Trade Contract Work before the effective date of insurance to be provided by the Trade Contractor and Owner as required by the Trade Contract Documents.

6.2 CONSTRUCTION SCHEDULE Prior to the commencement of the construction of the Trade Contract Work, the Trade Contractor shall submit a copy of its critical path method (CPM) construction schedule showing the completion of the Trade Contract Work within the allowable number of days identified above. The Trade Contractor shall regularly update its CPM construction schedule for the Trade Contract Work and promptly furnish the Construction Manager on an ongoing basis scheduling information requested by the Construction Manager for the Trade Contract Work. In consultation with the Trade Contractor, the Construction Manager shall incorporate the Trade Contract Work and work of other trade contractors into an overall Construction Schedule for the entire Project. The Trade Contractor shall be bound by the Construction. Nothing in this Trade Contractor Agreement shall relieve the Trade Contractor of any liability for any unexcused failure to comply with its original schedule, the Construction Schedule, or any completion dates. The Construction Manager shall have the right to coordinate the Trade Contractors, including the right, if necessary, to change the time, order and priority in which the various portions of the Trade Contract Work and the other work associated with the Project shall be performed.

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6.3 DELAYS AND EXTENSIONS OF TIME

6.3.1 If the Trade Contractor is delayed at any time in the commencement or progress of the Work by any cause beyond the control of the Trade Contractor, the Trade Contractor shall be entitled to an equitable extension of the Trade Contract Time if the Trade Contractor is able to show that the critical path of the Trade Contract Work was delayed by causes beyond the control of the Trade Contractor. Examples of causes beyond the control of the Trade Contractor include, but are not limited to, the following: acts or omissions of the Owner, the Design Professional, Construction Manager or Others; changes in the Work or the sequencing of the Work ordered by the Owner, or arising from decisions of the Owner that impact the time of performance of the Work; transportation delays not reasonably foreseeable; labor disputes not involving the Trade Contractor; general labor disputes impacting the Project but not specifically related to the Worksite; fire; terrorism, epidemics, adverse governmental actions, unavoidable accidents or circumstances; adverse weather conditions not reasonably anticipated; encountering Hazardous Materials; concealed or unknown conditions; delay authorized by the Owner pending dispute resolution; and suspension by the Owner under section 11.1. The Trade Contractor shall submit any requests for equitable extensions of Contract Time in accordance with the provisions of ARTICLE 8.

6.3.2 In addition, if the Trade Contractor is able to show that it incurred additional costs because the critical path of the Trade Contract Work was delayed by acts or omissions of the Owner, the Design Professional, Construction Manager or Others, changes in the Work or the sequencing of the Work ordered by the Owner, or arising from decisions of the Owner that impact the time of performance of the Work, encountering Hazardous Materials, or concealed or unknown conditions, delay authorized by the Owner pending dispute resolution or suspension by the Owner under section 11.1, then the Trade Contractor shall be entitled to an equitable adjustment in the Trade Contract Price subject to section 6.6.

6.3.3 NOTICE OF DELAYS In the event delays to the Trade Contract Work are encountered for any reason, the Trade Contractor shall provide prompt written notice to the Owner and the Construction Manager of the cause of such delays after Trade Contractor first recognizes the delay. The Owner and Trade Contractor agree to undertake reasonable steps to mitigate the effect of such delays.

6.4 NOTICE OF DELAY CLAIMS If the Trade Contractor believes it is due an equitable extension of Trade Contract Time or an equitable adjustment in Trade Contract Price as a result of a delay described in subsection 6.3.1, the Trade Contractor shall give the Owner and the Construction Manager written notice of the claim in accordance with section 8.4. If the Trade Contractor causes delay in the completion of the Trade Contract Work, the Owner shall be entitled to recover its additional costs subject to subsection 6.6. The Owner shall process any such claim against the Trade Contractor in accordance with ARTICLE 8.

6.5 LIQUIDATED DAMAGES

6.5.1 SUBSTANTIAL COMPLETION The Owner and the Trade Contractor agree that this Agreement ☐ shall / ☒ shall not (indicate one) provide for the imposition of liquidated damages based on the Date of Substantial Completion.

6.5.1.1 The Trade Contractor understands that if the Date of Substantial Completion established by this Agreement, as may be amended by subsequent Trade Change Order, is not attained, the Owner will suffer damages which are difficult to determine and accurately specify. The Trade Contractor agrees that if the Date of Substantial Completion is not attained the Trade Contractor shall pay the Owner Zero Dollars and No Cents ($0.00) as liquidated damages and not as a penalty for each day that Substantial Completion extends beyond the Date of Substantial Completion. The liquidated damages provided herein shall be in lieu of all liability for any and all

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extra costs, losses, expenses, claims, penalties and any other damages of whatsoever nature incurred by the Owner which are occasioned by any delay in achieving the Date of Substantial Completion.

6.5.2 FINAL COMPLETION The Owner and the Trade Contractor agree that this Agreement ☐ shall / ☒ shall not (indicate one) provide for the imposition of liquidated damages based on the Date of Final Completion.

6.5.2.1 The Trade Contractor understands that if the Date of Final Completion established by this Agreement, as may be amended by subsequent Trade Change Order is not attained, the Owner will suffer damages which are difficult to determine and accurately specify. The Trade Contractor agrees that if the Date of Final Completion is not attained the Trade Contractor shall pay the Owner Zero Dollars and No Cents ($0.00) as liquidated damages and not as a penalty for each day that Final Completion extends beyond the Date of Final Completion. The liquidated damages provided herein shall be in lieu of all liability for any and all extra costs, losses, expenses, claims, penalties and any other damages of whatsoever nature incurred by the Owner which are occasioned by any delay in achieving the Date of Final Completion.

6.5.3 OTHER LIQUIDATED DAMAGES The Owner and the Trade Contractor may agree upon the imposition of liquidated damages based on other project milestones or performance requirements. Such agreement shall be included as an exhibit to this Agreement.

6.6 LIMITED MUTUAL WAIVER OF CONSEQUENTIAL DAMAGES Except for damages mutually agreed upon by the Parties as liquidated damages in Section 6.5 and excluding losses covered by insurance required by the Trade Contract Documents, the Owner and the Trade Contractor agree to waive all claims against each other for any consequential damages that may arise out of or relate to this Agreement, except for those specific items of damages excluded from this waiver as mutually agreed upon by the Parties and identified below. The Owner agrees to waive damages including but not limited to the Owner's loss of use of the Project, any rental expenses incurred, loss of income, profit or financing related to the Project, as well as the loss of business, loss of financing, principal office overhead and expenses, loss of profits not related to this Project, loss of reputation, or insolvency. The Trade Contractor agrees to waive damages including but not limited to loss of business, loss of financing, principal office overhead and expenses, loss of profits not related to this Project, loss of bonding capacity, loss of reputation, or insolvency. The provisions of this section shall also apply to the termination of this Agreement and shall survive such termination.

6.6.1 The following items of damages are excluded from this mutual waiver: The provisions of this section shall also apply to the termination of this Agreement and shall survive such termination. The Owner and the Trade Contractor shall require similar waivers in contracts with Subcontractors and Others retained for the Project.

ARTICLE 7 TRADE CONTRACT PRICE

7.1 LUMP SUM As full compensation for performance by the Trade Contractor of the Work in conformance with the Contract Documents, the Owner shall pay the Trade Contractor the lump sum price of: XX dollars and XX cents ($XX.XX) . The lump sum price is hereinafter referred to as the Trade Contract Price, which shall be subject to increase or decrease as provided in article 8.

Lump Sum Price includes Base Bid of $X.XX and Alternate #XX for {alternate description} for $X.XX for a total Lump Sum Price of $X.XX.

7.2 ALLOWANCES

7.2.1 All allowances stated in the Trade Contract Documents shall be included in the Trade Contract Price. The Owner shall select allowance items in a timely manner so as not to delay the Trade Contract

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Work.

7.2.2 Allowances shall include the costs of materials, supplies and equipment delivered to the Worksite, less applicable trade discounts and including requisite taxes, unloading and handling at the Worksite, and labor and installation, unless specifically stated otherwise. The Trade Contractor's Overhead and profit for the allowances shall be included in the Trade Contract Price, but not in the allowances. The Trade Contract Price shall be adjusted by Trade Contract Change Order to reflect the actual costs when they are greater than or less than the allowances.

ARTICLE 8 CHANGES

Changes in the Trade Contract Work that are within the general scope of this Agreement shall be accomplished, without invalidating this Agreement, by Trade Contract Change Order, and Trade Contract Interim Directed Change.

8.1 TRADE CHANGE ORDER

8.1.1 The Owner may order or the Trade Contractor may request changes in the Trade Contract Work or the timing or sequencing of the Trade Contract Work that impacts the Trade Contract Price or the Trade Contract Time. All such changes in the Trade Contract Work that affect Trade Contract Time or Trade Contract Price shall in the form of a Trade Contract Change Order. Any such requests for a change in the Trade Contract Price or the Trade Contract Time shall be processed in accordance with this article 8. Trade Contract Change Orders shall be executed on the ConsensusDOCS 813 - Trade Contract Change Order (CM as Owner's Agent) with attachments as necessary.

8.1.2 The Owner, with the assistance of the Construction Manager, and the Trade Contractor shall negotiate in good faith an appropriate adjustment to the Trade Contract Price or the Trade Contract Time and shall conclude these negotiations as expeditiously as possible. Acceptance of the Trade Contract Change Order and any adjustment in the Trade Contract Price or Trade Contract Time shall not be unreasonably withheld.

8.2 TRADE CONTRACT INTERIM DIRECTED CHANGE

8.2.1 The Construction Manager may issue a written Trade Contract Interim Directed Change signed by the Owner directing a change in the Trade Contract Work prior to reaching agreement with the Trade Contractor on the adjustment, if any, in the Trade Contract Price or the Trade Contract Time.

8.2.2 The Owner, with the assistance of the Construction Manager, and the Trade Contractor shall negotiate expeditiously and in good faith for appropriate adjustments, as applicable, to the Trade Contract Price or the Trade Contract Time arising out of a Trade Contract Interim Directed Change. As the Trade Contract Changed Work is performed, the Trade Contractor shall submit its costs for such work with its application for payment beginning with the next application for payment within thirty (30) Days of the issuance of the Trade Contract Interim Directed Change. If there is a dispute as to the cost to the Owner, the Trade Contractor shall continue to perform the, Trade Contract Changed Work set forth in the Trade Contract Interim Directed Change and the Owner shall pay the requirements Trade Contractor the Cost of the Work, defined in 8.3.1.3 below upon receipt of an application for payment and the Owner's (and the Architect's and construction manger's) determination that the work has been completed. The Parties reserve their rights as to the disputed amount, subject to the requirements ARTICLE 12.

8.2.3 When the Owner and the Trade Contractor agree upon the adjustment in the Trade Contract Price or the Trade Contract Time, for a change in the Trade Contract Work directed by a Trade Contract Interim Directed Change, such agreement shall be the subject of a Trade Contract Change Order. The

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Trade Contract Change Order shall include all outstanding Trade Contract Interim Directed Changes on which the Owner and Trade Contractor have reached agreement on Contract Price or Contract Time issued since the last Trade Contract Change Order.

8.3 DETERMINATION OF COST

8.3.1 An increase or decrease in the Trade Contract Price or the Trade Contract Time resulting from a change in the Trade Contract Work shall be determined by one or more of the following methods:

8.3.1.1 unit prices set forth in this Agreement or as subsequently agreed;

8.3.1.2 a mutually accepted, itemized lump sum;

8.3.1.3 COST OF THE WORK Cost of the Work as defined by this subsection plus 10.0 % for Overhead and 5.0 % for profit. "Cost of the Work" shall include the following costs reasonably incurred to perform a change in the Work

8.3.1.3.1 wages paid for labor in the direct employ of the Constructor in the performance of the Work;

8.3.1.3.2 salaries of the Trade Contractor's employees when stationed at the field office to the extent necessary to complete the applicable Work, employees engaged on the road expediting the production or transportation of material and equipment, and supervisory employees from the principal or branch office performing the functions listed below;

8.3.1.3.3 cost of applicable employee benefits and taxes, including but not limited to, workers' compensation, unemployment compensation, social security, health, welfare, retirement and other fringe benefits as required by law, labor agreements, or paid under the Trade Contractor's standard personnel policy, insofar as such costs are paid to employees of the Trade Contractor who are included in the Cost of the Work in subsections .1 and .2 immediately above;

8.3.1.3.4 reasonable transportation, travel, and hotel expenses of the Trade Contractor's personnel incurred in connection with the Work;

8.3.1.3.5 cost of all materials, supplies, and equipment incorporated in the Work, including costs of inspection and testing if not provided by the Owner, transportation, storage, and handling;

8.3.1.3.6 payments made by the Trade Contractor to Subcontractors for Work performed under this Agreement;

8.3.1.3.7 cost, including transportation and maintenance of all materials, supplies, equipment, temporary facilities, and hand tools not owned by the workers that are used or consumed in the performance of the Work, less salvage value or residual value; and cost less salvage value of such items used, but not consumed that remain the property of the Trade Contractor;

8.3.1.3.8 rental charges of all necessary machinery and equipment, exclusive of hand tools owned by workers, used at the Worksite, whether rented from the Trade Contractor or Others, including installation, repair and replacement, dismantling, removal, maintenance, transportation, and delivery costs. Rental from unrelated third parties shall be reimbursed at actual cost. Rentals from the Trade Contractor or its affiliates, subsidiaries, or related parties shall be reimbursed at the prevailing rates in the locality of the Worksite up to eighty-five percent (85%) of the value of the piece of equipment;

8.3.1.3.9 cost of the premiums for all insurance and surety bonds which the Trade Contractor is

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required to procure or deems necessary, and approved by the Owner including any additional premium incurred as a result of any increase in the cost of the Work;

8.3.1.3.10 sales, use, gross receipts or other taxes, tariffs, or duties related to the Work for which the Trade Contractor is liable;

8.3.1.3.11 permits, fees, licenses, tests, and royalties;

8.3.1.3.12 reproduction costs, photographs, facsimile transmissions, long-distance telephone calls, data processing costs and services, postage, express delivery charges, data transmission, telephone service, and computer-related costs at the Worksite to the extent such items are used and consumed in the performance of the Work or are not capable of use after completion of the Work;

8.3.1.3.13 all water, power, and fuel costs necessary for the Work;

8.3.1.3.14 cost of removal of all nonhazardous substances, debris, and waste materials;

8.3.1.3.15 all costs directly incurred to perform a change in the Work which are reasonably inferable from the Contract Documents for the Changed Work;

8.3.1.3.16 DISCOUNTS All discounts for prompt payment shall accrue to the Owner to the extent such payments are made directly by the Owner. To the extent payments are made with funds of the Constructor, all cash discounts shall accrue to the Constructor. All trade discounts, rebates and refunds, and all returns from sale of surplus materials and equipment, shall be credited to the Cost of the Work;

8.3.1.3.17 COST REPORTING The Trade Contractor shall maintain in conformance with generally accepted accounting principles a complete and current set of records that are prepared or used by the Trade Contractor to calculate the Cost of Work. The Owner and Construction Manager shall be afforded access to the Trade Contractor's records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda and similar data relating to requested payment for Cost of the Work. The Trade Contractor shall preserve all such records for a period of three years after the final payment or longer where required by law;

8.3.1.3.18 COST AND SCHEDULE ESTIMATES The Trade Contractor shall use reasonable skill and judgment in the preparation of a cost estimate or schedule for a change to the Work, but does not warrant or guarantee their accuracy

8.3.1.4 If an increase or decrease cannot be agreed to as set forth in Clauses .1 through .3 above, and the Owner or the Construction Manager issues a Trade Contract Interim Directed Change, the cost of the change in the Trade Contract Work shall be determined by the reasonable actual expense and savings of the performance of the Work resulting from the change. If there is a net increase in the Trade Contract Price, the Trade Contractor's Fee shall be adjusted accordingly. In case of a net decrease in the Trade Contract Price, the Trade Contractor's Fee shall not be adjusted unless ten percent (10%) or more of the Project is deleted. The Trade Contractor shall maintain a documented, itemized accounting evidencing the expenses and savings.

8.3.2 If unit prices are set forth in the Trade Contract Documents or are subsequently agreed to by the Parties, but the character or quantity of such unit items as originally contemplated is so different in a proposed Trade Change Order that the original unit prices will cause substantial inequity to the Owner or the Trade Contractor, such unit prices shall be equitably adjusted.

8.4 CLAIMS FOR ADDITIONAL COST OR TIME Except as provided in subsection 6.3.2 and section 6.4 for

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any claim for an increase in the Trade Contract Price or the Trade Contract Time, the Trade Contractor shall give the Owner and the Construction Manager written notice of the claim within fourteen (14) Days after the occurrence giving rise to the claim or within fourteen (14) Days after the Trade Contractor first recognizes (or should have recognized) the condition giving rise to the claim, whichever is later. Except in an emergency, notice shall be given before proceeding with the Trade Contract Work. Thereafter, the Trade Contractor shall submit written documentation of its claim, including appropriate supporting documentation, within twenty-one (21) Days after giving notice, unless the Parties mutually agree upon a period of time. The Owner or Construction Manager shall respond in writing denying or approving the Trade Contractor's claim no later than fourteen (14) Days after receipt of the Trade Contractor's claim. Any change in the Trade Contract Price or the Trade Contract Time resulting from such claim shall be authorized by Trade Contract Change Order.

ARTICLE 9 PAYMENT

9.1 GENERAL PROVISIONS Within fourteen (14) calendar Days from the date of execution of this Agreement, the Trade Contractor shall prepare and submit to the Construction Manager for approval a Schedule of Values apportioned to the various divisions or phases of the Trade Contract Work. Each line item contained in the Schedule of Values shall be assigned a monetary price such that the total of all such items shall equal the Trade Contract Price. The Schedule of Values shall be prepared in such detail and be supported by such documents and proof as may be required by the Construction Manager.

9.2 PROGRESS PAYMENTS

9.2.1 APPLICATIONS The Trade Contractor shall submit to the Construction Manager monthly notarized applications for payment. Trade Contractor's applications for payment shall be itemized and supported by the Trade Contractor's Schedule of Values and any other substantiating data as required by this Trade Contractor Agreement or requested by the Construction Manager or Design Professional. Payment applications may include payment requests on account of properly authorized Trade Contract Change Orders and Interim Directed Changes. The progress payment application shall include Trade Contract Work performed through the preceding calendar month. The Construction Manager will review the application and recommend to the Design professional and the Owner amounts payable by the Owner to the Trade Contractor. The Owner, in accordance with the determination of the Design Professional, shall pay the amount otherwise due on any payment application, less any amounts as set forth below, no later than thirty (30) calendar Days after the payment application, or portion thereof, is approved the Design Professional. The Owner may deduct, from any progress payment, such amounts as may be retained pursuant to subsection 9.2.4 below.

9.2.2 STORED MATERIALS AND EQUIPMENT Unless otherwise provided in the contract documents, applications for payment may include materials and equipment not yet incorporated into the Work but delivered to and suitably stored onsite or offsite including applicable insurance, storage and costs incurred transporting the materials to an offsite storage facility. Approval of payment applications for stored materials and equipment stored offsite shall be conditioned on submission by the Trade Contractor of bills of sale and proof of required insurance, or such other procedures satisfactory to the Owner to establish the proper valuation of the stored materials and equipment, the Owner's title to such materials and equipment, and to otherwise protect the Owner's interests therein, including transportation to the site.

9.2.3 CLAIM WAIVERS

9.2.3.1 PARTIAL CLAIMWAIVERS AND AFFIDAVITS As a prerequisite for payment, the Trade Contractor shall provide, in a form satisfactory to the Owner and the Construction Manager, partial claim waivers in the amount of the application for payment and affidavits from the Trade Contractor, and its Subcontractors, Material Suppliers for the completed Trade Contract Work.

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Such waivers shall be effective upon payment. In no event shall the Trade Contractor be required to sign an unconditional waiver of claim, either partial or final, prior to receiving payment or in an amount in excess of what it has been paid.

9.2.4 RETAINAGE From each progress payment made to the Trade Contractor has the Owner shall retain FIVE (5) percent of the amount otherwise due after deduction of any amounts as provided in section 9.3 and in no event shall such percentage exceed any applicable statutory requirements of this Agreement. Retainage shall be withheld and administered in accordance with Iowa Code Chapter 572:

9.3 ADJUSTMENT OF TRADE CONTRACTOR'S PAYMENT APPLICATION The Owner or the Construction Manager, upon notification of the Design Professional, may reject or adjust a Trade Contractor payment application or nullify a previously approved Trade Contractor payment application, in whole or in part, as may reasonably be necessary to protect the Owner from loss or damage based upon the following, to the extent that the Trade Contractor is responsible therefor under this Trade Contractor Agreement:

9.3.1 the Trade Contractor's repeated failure to perform the Trade Contract Work as required by the Trade Contractor Agreement;

9.3.2 loss or damage arising out of or relating to the Trade Contractor Agreement and caused by the Trade Contractor to the Owner, or to the Construction Manager or others to whom the Owner may be liable;

9.3.3 the Trade Contractor's failure to properly pay for labor, materials, equipment or supplies furnished in connection with the Trade Contract Work;

9.3.4 nonconforming or defective Trade Contract Work which has not been corrected in a timely fashion;

9.3.5 reasonable evidence of delay in performance of the Trade Contract Work such that the work will not be completed within the Trade Contract Time, and that the unpaid balance of the Trade Contract Price is not sufficient to offset any liquidated damages or actual damages that may be sustained by the Owner as a result of the anticipated delay caused by the Trade Contractor;

9.3.6 reasonable evidence demonstrating that the unpaid balance of the Trade Contract Price is insufficient to cover the cost to complete the Trade Contract Work; and

9.3.7 third-party claims involving the Trade Contractor or reasonable evidence demonstrating that third-party claims are likely to be filed unless and until the Trade Contractor furnishes the Owner with adequate security in the form of a surety bond, letter of credit or other collateral or commitment which are sufficient to discharge such claims if established. No later than thirty (30) Days after receipt of an application for payment, the Owner or Construction Manager shall give written notice to the Trade Contractor, disapproving or nullifying it or a portion thereof, specifying the reasons for the disapproval or nullification. When the above reasons for disapproving or nullifying an application for payment are removed, payment will be made for amounts previously withheld.

9.4 PAYMENT NOT ACCEPTANCE Payment to the Trade Contractor does not constitute or imply acceptance of any portion of the Trade Contract Work.

9.5 PAYMENT DELAY If for any reason not the fault of the Trade Contractor, the Trade Contractor does not receive a progress payment from the Owner sixty (60) calendar Days after the time such payment is due, as defined in Subparagraph 9.2.1, then the Trade Contractor, upon giving within seven (7) calendar Days after written notice to the Owner, and without prejudice to and in addition to any other legal remedies, may stop its Trade Contract Work until payment of the full amount owing to the Trade Contractor has been received. The

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Trade Contract Price and Trade Contract Time shall be equitably adjusted by a Trade Contract Change Order to reflect reasonable cost and delay resulting from shutdown, delay and start-up.

9.6 SUBSTANTIAL COMPLETION

9.6.1 The Trade Contractor shall notify the Owner, the Construction Manager and the Design Professional when it considers Substantial Completion of the Trade Contract Work or a designated portion to have been achieved. The Construction Manager and the Design Professional shall promptly conduct an inspection to determine whether the Trade Contract Work or designated portion can be occupied or utilized for its intended use by the Owner without excessive interference in completing any remaining unfinished Trade Contract Work by the Trade Contractor. If the Construction Manager and the Design Professional determine that the Trade Contract Work or designated portion has not reached Substantial Completion, the Design Professional, and the Construction Manager, shall promptly compile a list of items to be completed or corrected so the Owner may occupy or utilize the Trade Contract Work or designated portion for its intended use. The Trade Contractor shall promptly complete all items on the list.

9.6.2 When Substantial Completion of the Trade Contract Work or a designated portion is achieved, the Construction Manager and the Design Professional shall prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, and the respective responsibilities of the Owner and Trade Contractor for interim items such as security, maintenance, utilities, insurance and damage to the Trade Contract Work. The Owner shall assume all responsibilities for items such as security, maintenance, utilities, and insurance, and damage to the Work. The certificate shall also list the items to be completed or corrected, and establish the time for their completion or correction. The Certificate of Substantial Completion shall be submitted to the Trade Contractor for written acceptance of responsibilities assigned in the Certificate.

9.6.3 Unless otherwise provided in the Certificate of Substantial Completion, warranties required by the Trade Contract Documents shall commence on the date of Substantial Completion of the Trade Contract Work or a designated portion.

9.6.4 Uncompleted items shall be completed by the Trade Contractor by the Final Completion date set forth in the Agreement and/or Construction Schedule. The Trade Contractor may request early release of retainage in accordance with Iowa Code Section 26.13. Payment for completed work and retainage shall be made in accordance with Iowa Code Chapters 26 and 573.

9.7 PARTIAL OCCUPANCY OR USE The Owner may occupy or use completed or partially completed portions of the Trade Contract Work when (a) the portion of the Trade Contract Work is designated in a Certificate of Substantial Completion, (b) appropriate insurer(s) consent to the occupancy or use, and (c) appropriate public authorities authorize the occupancy or use. Such partial occupancy or use shall constitute Substantial Completion of that portion of the Trade Contract Work.

9.8 FINAL PAYMENT

9.8.1 APPLICATION Upon acceptance of the Trade Contract Work by the Construction Manager, and approval by the Design Professional, and upon the Trade Contractor furnishing evidence of fulfillment of the Trade Contractor's obligations in accordance with the Trade Contract Documents, the Trade Contractor shall submit its application for final payment. The Construction Manager will review the Trade Contractor's final payment application and recommend to the Design Professional and the Owner an amount payable by the Owner to the Trade Contractor. The Design Professional shall then recommend an amount to be paid by the Owner. Final payment shall be made in accordance with Iowa Code Chapters 26 and 573.

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9.8.2 REQUIREMENTS Along with its application for final payment, the Trade Contractor shall furnish to the Construction Manager:

9.8.2.1 an affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the Trade Contract Work for which the Owner or its property or the Construction Manager or the Owner's surety might in any way be liable, have been paid or otherwise satisfied;

9.8.2.2 consent of the Trade Contractor's surety to final payment;

9.8.2.3 satisfaction of closeout procedures as may be required by the Trade Contractor Agreement;

9.8.2.4 certification(or other writing indicating) that insurance required by the Trade Contractor Agreement is and will remain effect beyond final payment pursuant to this Trade Contractor Agreement and

9.8.2.5 other data if required by the Owner or Construction Manager, such as receipts, releases, and waivers of liens effective upon payment to the extent and in such form as may be designated by the Owner or Construction Manager. Acceptance of final payment by the Trade Contractor shall constitute a waiver of all claims by the Trade Contractor except those previously made in writing and identified by the Trade Contractor as unsettled at the time of final application for payment.

9.8.3 TIME OF PAYMENT Final payment of the balance of the Trade Contract Price, less any amount retained pursuant to subsection 9.2.4 of this Agreement, and as required by Iowa Code Chapters 26 and 573, which among other things requires that twice the amount of an Iowa Code Chapter 573 subcontractor claim be withheld from final payment, shall be made to the Trade contractor within sixty (60) Days after the Trade Contractor has submitted a complete and accurate application for final payment.

9.8.4 LATE PAYMENT INTEREST Progress payments or final payment due and unpaid under this Trade Contractor Agreement shall bear interest from the date payment is due at the statutory rate prevailing at the place of the Project.

9.9 PAYMENT USE AND VERIFICATION The Trade Contractor is required to pay for all labor, materials and equipment used in the performance of the Trade Contract Work through the most current period applicable to progress payments received. Reasonable evidence, satisfactory to the Construction Manager, may be required to show that all obligations relating to the Trade Contract Work are current before releasing any payment due on the Trade Contract Work. If required by the Construction Manager, before final payment is made for the Trade Contract Work, the Trade Contractor shall submit evidence satisfactory to the Construction Manager that all payrolls, bills for materials and equipment, and all known indebtedness connected with the Trade Contract Work, have been paid or otherwise satisfied as set forth in subsection 9.8.2.

ARTICLE 10 INDEMNITY, INSURANCE, WAIVERS AND BONDS

10.1 INDEMNITY

10.1A To the extent portions of this Article are in conflict with SF 396 (codified at Iowa Code Section 573A.5) said portions are void and unenforceable.

10.1.1 TRADE CONTRACTOR'S INDEMNITY To the fullest extent permitted by law, the Trade Contractor shall indemnify and hold harmless the Owner, the Owner's officers, directors, members,

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consultants, agents and employees, from all claims for bodily injury and property damage, other than to the Work itself and other property insured under subsection 10.3.1, including reasonable attorneys' fees, costs and expenses, that may arise from the performance of the Work, but only to the extent caused by the negligent acts or omissions of the Trade Contractor, Subcontractors or anyone employed directly or indirectly by any of them or by anyone for whose acts any of them may be liable. The Trade Contractor shall be entitled to reimbursement of any defense costs paid above the Trade Contractor's percentage of liability for the underlying claim to the extent provided for under subsection 10.1.2.

10.1.2 OWNER'S INDEMNITY To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Trade Contractor, its officers, directors, members, consultants, agents, and employees, from all claims for bodily injury and property damage, other than property insured under subsection 10.3.1, including reasonable attorneys' fees, costs and expenses, that may arise from the performance of work by Owner, Design Professional or Others, but only to the extent caused by the negligent acts or omissions of the Owner, Design Professional or Others. The Owner shall be entitled to reimbursement of any defense costs paid above Owner's percentage of liability for the underlying claim to the extent provided for under subsection 10.1.1.

10.1.3 CONSTRUCTION MANAGER AND DESIGN PROFESSIONAL INDEMNITY The Owner shall cause the Construction Manager and the Design Professional to agree to indemnify and hold harmless the Owner from all claims for bodily injury and property damage, other than to the Work itself and other property insured under section 10.3, that may arise from the Construction Manager's or the Design Professional's services, but only to the extent that such claims result from the negligent acts or omissions of the Construction Manager or the Design Professional, respectively, or anyone for whose acts or omissions the Construction Manager or Design Professional, respectively, is liable. Such provisions shall be in a form no less protective of the Parties than the Construction Manager's Indemnity provided in ConsensusDocs 801 (2011) or the Design Professional's indemnity provided in ConsensusDocs 803 (2011) respectively, and shall be reasonably satisfactory to the Owner and the Trade Contractor.

10.1.4 ADJACENT PROPERTY INDEMNIFICATION To the extent of the limits of Trade Contractor's Commercial General Liability Insurance specified in subsection 10.2.1 or Zero Dollars and No Cents ($0.00) whichever is more, the Trade Contractor shall indemnify and hold harmless the Owner against any and all liability, claims, demands, damages, losses and expenses, including attorney's fees, in connection with or arising out of any damage or alleged damage to any of Owner's existing adjacent property that may arise from the performance of the Trade Contract Work, but only to the extent of the negligent acts or omissions of the Trade Contractor, Subcontractor or anyone employed directly or indirectly by any of them or by anyone for whose acts any of them may be liable.

10.1.5 NO LIMITATION ON LIABILITY In any and all claims against the Indemnitees by any employee of the Trade Contractor, anyone directly or indirectly employed by the Trade Contractor or anyone for whose acts the Trade Contractor may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Trade Contractor under Workers' Compensation acts, disability benefit acts or other employment benefit acts.

10.2 TRADE CONTRACTOR'S INSURANCE

10.2.1 Prior to the start of the Work, the Trade Contractor shall procure and maintain in force Workers Compensation/Employers' Liability Insurance, Business Automobile Liability Insurance, and Commercial General Liability Insurance (CGL). The CGL policy shall include coverage for liability arising from premises, operations, independent contractors, products-completed operations, personal injury and

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advertising injury, contractual liability, and broad form property damage. The Trade Contractor's liability policies, as required in this Subparagraph 10.2.1, shall be written on an occurrence basis with at least the following limits of liability:

10.2.1.1 Workers' Compensation- amount required by the laws of Iowa

10.2.1.2 Employers' Liability Insurance - $500,000 or an amount required by Iowa law, whichever is greater.

10.2.1.3 Business Automobile Liability Insurance

a. $1,000,000 Each Accident

10.2.1.4 Commercial General Liability Insurance

a. $1,000,000 Each Occurrence b. $2,000,000 General Aggregate c. $1,000,000 Products/Completed Operations Aggregate d. $1,000,000 Personal and Advertising Injury Limit

10.2.2 The Trade Contractor Must also carry and maintain Excess or Umbrella Liability coverage for the policies in subsection 10.2.1 in the amounts as listed below:

Trade Contractor Contract Amount: <$1,000,000 - $2 Million Umbrella or more $1,000,000 - $5,000,000 - $5 Million Umbrella or more >$5,000,000 - $10 Million Umbrella or more

10.2.3 The Trade Contractor shall maintain in effect all insurance coverage required under subsection 10.2.1 with insurance companies lawfully authorized to do business in Iowa. Such insurance companies shall have a minimum A.M. Best Rating of A-VI (Consult instructions and insurance advisor).If the Trade Contractor fails to obtain or maintain any insurance coverage required under this Agreement, the Owner may purchase such coverage and charge the expense to the Trade Contractor, or terminate this Agreement.

10.2.4 To the extent commercially available, the policies of insurance required under Subparagraph 10.2.1 shall contain a provision that the insurance company or its designee must give the Owner written notice transmitted in paper or electronic format: (a) 30 days before coverage is nonrenewed by the insurance company and (b) with 10 business days after cancelation of coverage by the insurance company. The Trade Contractor shall maintain completed operations liability insurance for one year after acceptance of the Contract Documents, whichever is longer. Prior to commencement of services, the Trade Contract shall furnish the Owner with certificates evidencing the required coverages. In addition, if any insurance policy required under subsection 10.2.1 is not to be immediately replaced without a lapse in coverage when it expires, exhausts its limits, or is to be, cancelled, the Trade Contractor shall give Owner prompt written notice upon actual or constructive knowledge of such condition.

10.2.5 ADDITIONAL LIABILITY COVERAGE

10.2.5.1 The Owner [X] shall / [ ] shall not (indicate one) require the Trade Contractor to purchase and maintain liability coverage, primary to the Owner's coverage under subsection 10.3.1.

10.2.5.2 If required by subsection 10.2.5.1, the additional liability coverage required of the Trade Contractor shall be:

1. Additional Insured Owner shall be named as an additional insured on Trade Contractor's Commercial General Liability Insurance specified for operations and completed operations,

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but only with respect to liability for bodily injury, property damage or personal and advertising injury to the extent caused by the negligent acts or omissions of Trade Contractor, or those acting on Trade Contractor's behalf, in the performance of Trade Contractor's Work for.

2. OCP Trade Contractor shall provide an Owners' and Contractors' Protective Liability Insurance ("OCP") policy with limits equal to the limits on Commercial General Liability Insurance specified or limits as otherwise required by Owner.

Any documented additional cost in the form of a surcharge associated with procuring the additional liability coverage in accordance with this subsection shall be paid by the Owner directly or the costs may be reimbursed by the Owner to the Trade Contractor by increasing the Trade Contract Price to correspond to the actual cost required to purchase and maintain the additional liability coverage. Prior to commencement of the Work, the Trade Contractor shall obtain and furnish to the Owner a certificate evidencing that the additional liability coverages have been procured.

10.2.6 PROFESSIONAL LIABILITY INSURANCE To the extent the Trade Contractor is required to procure design services under this Agreement, in accordance with section 3.14, the Trade Contractor shall require the designers to obtain professional liability insurance for claims arising from the negligent performance of professional services under this Agreement, with a company reasonably satisfactory to the Owner, including coverage for all professional liability caused by any of the Designer's(s') consultants, written for not less than $1,000,000 per claim and in the aggregate with the deductible not to exceed $2,000,000. The deductible shall be paid by the Designer.

10.3 OWNER'S INSURANCE

10.3.1 Deleted.

10.3.2 Deleted.

10.4 PROPERTY INSURANCE

10.4.1 Before the start of Trade Contract Work, the Owner shall obtain and maintain Builder's Risk Policy insurance with minimum coverage limits equal to the full cost of replacement of the Project at the time of loss. This insurance shall also name the Trade Contractor, Subcontractors, Material Suppliers, Construction Manager and Design Professional as insureds. This insurance shall be written as a Builder's Risk Policy or equivalent form to cover all risks of physical loss except those specifically excluded by the policy, and shall insure at least against the perils of fire, lightning, explosion, windstorm, hail, smoke, aircraft and vehicles, riot and civil commotion, theft, vandalism, malicious mischief, debris removal, flood (subject to sublimits), earthquake (subject to sublimits), earth movement, water damage, wind damage, testing if applicable, collapse however caused, and shall include coverage for, material, or equipment stored offsite, onsite or in transit. This policy shall provide for a waiver of subrogation in favor of the Trade Contractor, Subcontractors, Material Suppliers, Construction Manager and Design Professional. This insurance shall remain in effect until the Substantial Completion of the Work, final payment has been made or until no person or entity other than the Owner has an insurable interest in the property to be covered by this insurance, whichever is sooner. Partial occupancy or use of the Work shall not commence until the Owner has secured the consent of the insurance company or companies providing the coverage required in this Subparagraph 10.4.1.

10.4.2 If the Owner does not intend to purchase the property insurance required by this Agreement, including all of the coverages and deductibles described herein, the Owner shall give written notice to the Trade Contractor, the Design Professional and the Construction Manager before the Trade Contract

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Work is commenced. The Trade Contractor may then provide insurance to protect its interests and the interests of the Subcontractors, including the coverage of deductibles. The cost of this insurance shall be charged to the Owner in a Change Order. The Owner shall be responsible for all of Trade Contractor's costs reasonably attributed to the Owner's failure or neglect in purchasing or maintaining the coverage described above.

10.4.2.1 The Owner will not obtain insurance to cover the risk of physical loss resulting from Terrorism. The Construction Manager is not required to purchase this type of insurance but may purchase this type of insurance if it chooses. f purchased, the cost of this insurance shall be borne by the Construction manager.

10.4.3 POLICIES The Owner shall provide the Trade Contractor with a copy of all policies including all endorsements upon request.

10.5 PROPERTY INSURANCE LOSS ADJUSTMENT

10.5.1 LOSS ADJUSTMENT Any insured loss shall be adjusted with the Owner and the Trade Contractor and made payable to the Owner as trustee for the insureds, as their interests may appear.

10.5.2 DISTRIBUTION OF PROCEEDS Following the occurrence of an insured loss, monies received will be deposited in a separate account and the trustee shall make distribution in accordance with the agreement of the Parties in interest.

10.6 WAIVERS

10.6.1 PROPERTY DAMAGE The Owner and Trade Contractor waive all claims and other rights they may have against each other for loss of or damage to (a) the Project, (b) all materials, machinery, equipment and other items used in accomplishing the Trade Contract Work or services or to be incorporated into the Project, while the same are in transit, at the Project Site, during erection and otherwise, and (c) all property owned by or in the custody of Owner and its affiliates, however such loss or damage shall occur, to be extent such damage is covered by property insurance. The proceeds of such insurance shall be held by the Owner as trustee.

10.6.2 WAIVER OF SUBROGATION The Owner shall have its insurers waive all rights of subrogation they may have against the Construction Manager, Design Professional, Trade Contractors, and their Subcontractors and Material Suppliers on all policies carried by the Owner on the Project and adjacent properties, including, after final payment, those policies to be provided on the completed Project not intended to insure the Project during construction.

10.6.3 ENDORSEMENT If the policies of insurance referred to in this section require an endorsement to provide for continued coverage where there is a waiver of subrogation, the Owner will cause them to be so endorsed.

10.7 RISK OF LOSS Except to the extent a loss is covered by propertyinsurance,carried by the owner, risk of loss or damage to the Work shall be upon the Trade Contractor until the Date of Final Completion, unless otherwise agreed to by the Parties.

10.8 BONDS Performance and Payment Bonds

☒ are

☐ are not

required of the Trade Contractor that meet the requirements of Iowa Code Chapter 573. A deposit in lieu of a

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bond may be acceptable if it meets the requirements of Iowa Code Section 573.4. Such bonds shall be issued by a surety admitted in the State in which the Project is located and must be acceptable to the Owner. The Owner's acceptance shall not be withheld without reasonable cause. The penal sum of the Payment Bond and of the Performance Bond shall each be one hundred percent (100%) of the original Contract Price. Any increase in the Contract Price that exceeds ten percent (10%) in the aggregate shall require a rider to the Bonds increasing penal sums accordingly. Up to such ten percent (10%) amount, the penal sum of the Bond shall remain equal to one hundred percent (100%) of the Contract Price. The Trade Contractor shall endeavor to keep its surety advised of changes potentially impacting the Contract Time and Contract Price, though the Trade Contractor shall require that its surety waives any requirement to be notified of any alteration or extension of time. The Trade Contractor's Payment Bond for the Project, if any, shall be made available by the Owner for review and copying by the Subcontractor. Iowa Code Chapter 573 shall control and take precedence over any conflicting term or condition in this Agreement

ARTICLE 11 SUSPENSION, NOTICE TO CURE AND TERMINATION OF AGREEMENT

11.1 SUSPENSION BY OWNER FOR CONVENIENCE

11.1.1 OWNER SUSPENSION Should the Owner order the Trade Contractor in writing to suspend, delay, or interrupt the performance of the Trade Contract Work for such period of time as may be determined to be appropriate for the convenience of the Owner and not due to any act or omission of the Trade Contractor or any person or entity for whose acts or omissions the Trade Contractor may be liable, then the Trade Contractor shall immediately suspend, delay or interrupt that portion of the Trade Contract Work as ordered by the Owner. The Trade Contract Price and the Trade Contract Time shall be equitably adjusted by Trade Contract Change Order for the cost and delay resulting from any such suspension.

11.1.2 Any action taken by the Owner that is permitted by any other provision of the Trade Contract Documents and that results in a suspension of part or all of the Trade Contract Work does not constitute a suspension of Trade Contract Work under this section.

11.2 NOTICE TO CURE A DEFAULT If the Trade Contractor persistently refuses or fails to supply enough properly skilled workers, proper materials, or equipment to maintain the approved Construction Schedule in accordance with ARTICLE 6, or fails to make prompt payment to its workers, Subcontractors or Material Suppliers; disregards laws, ordinances, rules, regulations or orders of any public authority having jurisdiction; or is otherwise guilty of a material breach of a provision of this Agreement, the Trade Contractor may be deemed in default. If the Trade Contractor fails within seven (7) business Days after receipt of written notification to commence and continue satisfactory correction of such default with diligence and promptness, then the Owner shall give the Trade Contractor a second notice to correct the default within a three (3) Day period. If the Trade Contractor fails to promptly commence and continue satisfactory correction of the default following receipt of such second notice, the Owner without prejudice to any other rights or remedies may:

11.2.1 supply workers and materials, equipment and other facilities as the Owner or Construction Manager deems necessary for the satisfactory correction of the default, and charge the cost to the Trade Contractor, who shall be liable for the payment of same including reasonable Overhead, profit and attorneys' fees;

11.2.2 contract with Others to perform such part of the Trade Contract Work as the Owner or Construction Manager determines shall provide the most expeditious correction of the default, and charge the cost to the Trade Contractor;

11.2.3 withhold payment due the Trade Contractor in accordance with section 9.3; and

11.2.4 in the event of an emergency affecting the safety of persons or property, immediately commence

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and continue satisfactory correction of such default as provided in subsections 11.2.1 and 11.2.2 without first giving written notice to the Trade Contractor, but shall give prompt written notice of such action to the Trade Contractor following commencement of the action.

11.3 OWNER'S RIGHT TO TERMINATE FOR DEFAULT

11.3.1 TERMINATION BY OWNER FOR DEFAULT If, within seven (7) Days of receipt of a notice to cure pursuant to section 11.2, the Trade Contractor fails to commence and satisfactorily continue correction of the default set forth in the notice to cure, the Owner may notify the Trade Contractor that it intends to terminate this Agreement for default absent appropriate corrective action within fourteen additional Days. After the expiration of the additional fourteen (14) Day period, the Owner may terminate this Agreement by written notice absent appropriate corrective action. Termination for default is in addition to any other remedies available to Owner under section 11.2. If the Owner's cost arising out of the Trade Contractor's failure to cure, including the cost of completing the Trade Contract Work and reasonable attorneys' fees, exceeds the unpaid Trade Contract Price, the Trade Contractor shall be liable to the Owner for such excess costs. If the Owner's costs are less than the unpaid Trade Contract Price, the Owner shall pay the difference to the Trade Contractor. In the event the Owner exercises its rights under this section, upon the request of the Trade Contractor the Owner shall furnish to the Trade Contractor a detailed accounting of the cost incurred by the Owner.

11.3.2 USE OF TRADE CONTRACTOR'S MATERIALS, SUPPLIES AND EQUIPMENT If the Owner or Others perform work under this section, the Owner shall have the right to take and use any materials, supplies and equipment belonging to the Trade Contractor and located at the Worksite for the purpose of completing any remaining Trade Contract Work. Immediately upon completion of the Work, any remaining materials, supplies or equipment not consumed or incorporated in the Trade Contract Work shall be returned to the Trade Contractor in substantially the same condition as when they were taken, reasonable wear and tear excepted.

11.3.3 If the Trade Contractor files a petition under the Bankruptcy Code, this Agreement may be terminated for cause at the may be terminated for cause at the Owner.

11.3.3 If the Trade Contractor files a petition under the Bankruptcy Code, this Agreement may be terminated for cause at the may be terminated for cause at the Owner.

11.3.4 The Owner shall make reasonable efforts to mitigate damages arising from Trade Contractor default, and shall promptly invoice the Trade Contractor for all amounts due pursuant to sections 11.2 and 11.3.

11.4 TERMINATION BY OWNER FOR CONVENIENCE

11.4.1 Upon written notice to the Trade Contractor, the Owner may, without cause, terminate this Agreement. The Trade Contractor shall immediately stop the Work, follow the Owner's or Construction Manager's instructions regarding shutdown and termination procedures, and strive to minimize any further costs.

11.4.2 If the Owner terminates this Agreement pursuant to this section, the Trade Contractor shall be paid:

11.4.2.1 for the Work performed to date including Overhead and profit; and

11.4.2.2 for all demobilization costs and costs incurred as a result of the termination but not including Overhead or profit on work not performed;

11.4.2A Upon written notice to the Trade Contractor the Owner has the right to terminate this

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Agreement without penalty as a result of the following: 1) the legislature or governor fail to appropriate funds sufficient to allow the Owner to operate as required and fulfill its obligations under this Agreement, 2) funds are de-appropriated or not allocated, 3) the Owner's authorization to operate is withdrawn or there is a material alteration in the programs administered by the owner, or 4) the Owner's duties are substantially modified. If such a termination results then the Trade Contractor shall be paid in the manner set forth in subparagraph 11.4.2. If, however, an appropriation to cover the cost of this Agreement becomes available within sixty (60) days subsequent to termination under this paragraph then the Owner agrees to re-enter into a modified version of this Agreement that accounts for the termination and reinstatement.

11.4.3 If the Owner terminates this Agreement pursuant to sections 11.3 or 11.4, the Trade Contractor shall:

11.4.3 If the Owner terminates this Agreement pursuant to sections 11.3 or 11.4, the Trade Contractor shall:

11.4.3.1 execute and deliver to the Owner all papers and take all action required to assign, transfer and vest in the Owner the rights of the Trade Contractor to all materials, supplies and equipment for which payment has or will be made in accordance with the Trade Contract Documents and all subcontracts, orders and commitments which have been made in accordance with the Trade Contract Documents;

11.4.3.2 exert reasonable effort to reduce to a minimum the Owner's liability for subcontracts, orders and commitments that have not been fulfilled at the time of the termination;

11.4.3.3 cancel any subcontracts, orders and commitments as the Owner or Construction Manager directs; and

11.4.3.4 sell at prices approved by the Owner or Construction Manager any materials, supplies and equipment as the Owner or Construction Manager directs, with all proceeds paid or credited to the Owner.

11.5 TRADE CONTRACTOR'S RIGHT TO TERMINATE

11.5.1 Upon seven (7) Days' written notice to the Owner and Construction Manager, the Trade Contractor may terminate this Agreement if the Trade Contract Work has been stopped for a thirty (30) Day period through no fault of the Trade Contractor for any of the following reasons:

11.5.1.1 under court order or order of other governmental authorities having jurisdiction;

11.5.1.2 as a result of the declaration of a national emergency or other governmental act during which, through no act or fault of the Trade Contractor, materials are not available; or

11.5.1.3 suspension by the Owner for convenience pursuant to section 11.1

11.5.2 In addition, upon seven (7) Days' written notice to the Owner and Construction Manager, the Trade Contractor may terminate the Agreement if the Owner:

11.5.2.1 fails to furnish reasonable evidence pursuant to section 4.1.2 that sufficient funds are available and committed for Project financing, or

11.5.2.2 assigns this Agreement over the Trade Contractor's reasonable objection, or

11.5.2.3 fails to pay the Trade Contractor in accordance with this Agreement and the Trade Contractor has complied with the notice provisions of section 9.5, or

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11.5.2.4 otherwise materially breaches this Agreement.

11.5.3 Upon termination by the Trade Contractor in accordance with this section, the Trade Contractor shall be entitled to recover from the Owner payment for all Trade Contract Work executed and for any proven loss, cost or expense in connection with the Trade Contract Work, including all demobilization costs plus reasonable Overhead and profit on work not performed.

11.6 OBLIGATIONS ARISING BEFORE TERMINATION Even after termination pursuant to ARTICLE 11, the provisions of this Agreement still apply to any Trade Contract Work performed, payments made, events occurring, costs charged or incurred or obligations arising before the termination date.

ARTICLE 12 DISPUTE MITIGATION AND RESOLUTION

12.1 WORK CONTINUANCE AND PAYMENT Unless otherwise agreed in writing, the Trade Contractor shall continue the Trade Contract Work and maintain the Construction Schedule during any dispute mitigation or resolution proceedings. If the Trade Contractor continues to perform, the Owner shall continue to make payments in accordance with this Agreement.

12.2 DIRECT DISCUSSIONS If the Parties cannot reach resolution on a matter relating to or arising out of the Agreement, the Parties shall endeavor to reach resolution through good faith direct discussions between the Parties' representatives, who shall possess the necessary authority to resolve such matter and who shall record the date of first discussions. The authorized representative for the Trade Contractor is identified in Paragraph 3.4 of the Agreement. The authorized representative for the Owner is identified in Paragraph 4.2 of the Agreement. The parties' authorized representative are, among other things, authorized to resolve matters of disagreement and disputes between the Parties. If the dispute remains unresolved after fifteen (15) Days from the date of first discussion, the Parties shall submit such matter to the dispute mitigation and dispute resolution procedures selected herein.

12.3 MITIGATION The Parties agree that dispute mitigation procedures provided in this Project. Disputes remaining unresolved after direct discussions shall be directed to the selected mitigation procedure immediately below. The dispute mitigation procedure shall result in nonbinding finding on the matter. This may be introduced as evidence at a subsequent binding adjudication of the matter, as designee on Paragraph 12.5. The Parties agree that the dispute mitigation procedure shall be

(Designate only one.)

[X] Project Neutral

[ ] Dispute Review Board

12.3.1 MITIGATION PROCEDURES The Project Neutral/Dispute Review Board shall be mutually selected and appointed by the Parties and shall execute a retainer agreement with the Parties establishing the scope of the Project Neutral/Dispute Review Board's responsibilities. The costs and expenses of the Project Neutral/Dispute Review Board shall be shared equally by the Parties. The Project Neutral/Dispute Review Board shall be available to either Party, upon request, throughout the course of the Project, and shall make regular visits to the Project so as to maintain an up-to-date understanding of the Project progress and issues and to enable the Project Neutral/Dispute Review Board to address matters in dispute between the Parties promptly and knowledgeably. The Project Neutral/Dispute Review Board shall issue nonbinding findings within five (5) business Days of referral of the matter to the Project Neutral, unless good cause is shown.

12.3.2 If the matter remains unresolved following the issuance of the nonbinding finding by the mitigation procedure or if the Project Neutral/Dispute Review Board fails to issue nonbinding findings

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within five (5) Days of the referral, the Parties shall submit the matter to the binding dispute resolution procedure designated in section 12.5.

12.4 MEDIATION If direct discussions pursuant to section 12.2 do not result in resolution of the matter and no dispute mitigation procedure is selected under section 12.3, the Parties shall endeavor to resolve the matter by mediation through the current Construction Industry Mediation Rules of the American Arbitration Association, or the Parties may mutually agree to select another set of mediation rules. The administration of the mediation shall be as mutually agreed by the Parties. The mediation shall be convened within thirty (30) business Days of the matter first being discussed and shall conclude within forty-five (45) business Days of the matter first being discussed. Either Party may terminate the mediation at any time after the first session, but the decision to terminate shall be delivered in person by the terminating Party to the non-terminating Party and to the mediator. The costs of the mediation shall be shared equally by the Parties.

12.5 BINDING DISPUTE RESOLUTION If the matter is unresolved after submission of the matter to a mitigation procedure or to mediation, the Parties shall submit the matter to the binding dispute resolution procedure designated herein.

(Designate only one.)

☐ Arbitration using the current Construction Industry Arbitration Rules of the American Arbitration Association

☒ Litigation in either the state or federal court having jurisdiction of the matter in the location of the Project.

12.5.1 The costs of any binding dispute resolution procedures shall be borne by the non-prevailing Party, as determined by the adjudicator of the dispute. However, the costs of binding dispute resolution does not include attorney fees. The Parties are each responsible for paying for their own attorney fees.

12.5.2 VENUE The venue of any binding dispute resolution procedure shall be Des Moines, Iowa.

12.6 MULTIPARTY PROCEEDING All parties necessary to resolve a claim shall be parties to the same dispute resolution proceeding. Appropriate provisions shall be included in all other contracts relating to the Work to provide for the joinder or consolidation of such dispute resolution procedures.

12.7 LIEN RIGHTS The Trade Contractor acknowledges that it has no mechanic's lien rights on this Project because it is a public improvement project.

ARTICLE 13 MISCELLANEOUS PROVISIONS

13.1 ASSIGNMENT Neither the Owner nor the Trade Contractor shall assign their interest in this Agreement without the written consent of the other except as to the assignment of proceeds. The terms and conditions of this Agreement shall be binding upon both Parties, their partners, successors, assigns and legal representatives. Neither Party to this Agreement shall assign the Agreement as a whole without written consent of the other. If either Party attempts to make such an assignment, that Party shall nevertheless remain legally responsible for all obligations under this Agreement, unless otherwise agreed by the other Party.

13.2 GOVERNING LAW This Agreement and all disputes arising there from shall be governed by the Iowa law.

13.3 SEVERABILITY The partial or complete invalidity of any one or more provisions of this Agreement shall not affect the validity or continuing force and effect of any other provision.

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13.4 NO WAIVER OF PERFORMANCE The failure of either Party to insist, in any one or more instances, on the performance of any of the terms, covenants or conditions of this Agreement, or to exercise any of its rights, shall not be construed as a waiver or relinquishment of such term, covenant, condition or right with respect to further performance or any other term, covenant, condition or right.

13.5 TITLES AND GROUPINGS The titles given to the articles of this Agreement are for ease of reference only and shall not be relied upon or cited for any other purpose. The grouping of the articles in this Agreement and of the Owner's specifications under the various headings is solely for the purpose of convenient organization and in no event shall the grouping of provisions, the use of sections or the use of headings be construed to limit or alter the meaning of any provisions.

13.6 ASSISTANCE OF COUNSEL AND INTERPRETATION The Parties agree that they had the opportunity to obtain the assistance of counsel in reviewing the Agreement terms prior to execution. This Agreement shall be construed neither against nor in favor of either Party, but shall be construed in a neutral manner.

13.7 RIGHTS AND REMEDIES The Parties' rights, liabilities, responsibilities and remedies with respect to this Agreement, whether in contract, tort, negligence or otherwise, shall be exclusively those expressly set forth in this Agreement.

13.8 ADDITIONAL PROVISIONS (Insert here other provisions, if any, that pertain to this Agreement See Below.)

13.9 COMPLIANCE WITH LAW AND REGULATIONS The Trade Contractor shall comply with all applicable federal, state, and local laws, rules, ordinances, regulations and orders when performing services and/or performing work under this Agreement, including without limitation, all laws applicable to the prevention of discrimination in employment and the use of targeted small businesses as subcontractors or suppliers. The Trade Contractor declares that it has complied with all federal, state and local laws regarding business permits and licenses that may be required to provide the services and work required by this Agreement. The Trade Contractor further acknowledges that if this Project is a recipient of Federal financial assistance that it may be subject to requirements of Federal Acts and Executive Orders as mandated by Federal agencies having authority and jurisdiction to enforce and ensure compliance with such laws and regulations including, but not necessarily limited to, the Davis Bacon Act and other Federal Acts and Executive Orders.

13.10 EMPLOYMENT PRACTICES: It is the intent of the Iowa Department of Administrative Services to assure equal employment opportunity in all contract work as required by law. Vendors, are required to take affirmative action to ensure that applicants employed or seeking employment with them are treated equally as required by law. Vendors shall not illegally discriminate against any employee. During the course of the Project, the Vendor may be required to show compliance with the EEO and Affirmative Action requirements. Noncompliance with the provisions set forth at the time of contract award may result in termination or suspension of the Agreement in whole or in part. All vendors and service providers working under the terms of this Agreement are prohibited from engaging in discriminatory employment practices forbidden by Iowa law. Vendors shall complete and submit the Nondiscrimination Clause form for the Owner's approval.

13.11 RECIPROCAL BIDDER PREFERENCE In accordance with Iowa Code Section 73A.21, as amended in 2011 by HF 648, if the Trade Contractor is not a resident bidder of Iowa, as defined by law, then the Trade Contractor must specifically identify in writing with its bid any and all preferences or preferential treatment (including preferences related to labor) enforced by the state or foreign country in which the Trade Contractor is a resident. If the low bid Trade Contractor is not a resident bidder of Iowa and the Trade Contractor's foreign State of residence enforces such a preference then the Owner shall reciprocally enforce the preference in favor of a resident bidder of Iowa. Failure on the part of the Trade Contractor to completely and accurately abide by this legal requirement may, among other things, result in civil penalties and void this Agreement. The Trade Contractor should contact its attorney regarding this legal requirement if the Trade

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Contractor has questions regarding its meaning or application.

13.12 LABOR RELATIONS The Trade Contractor shall comply with all Iowa and Federal labor laws. In accordance with Executive Order Number 69, issued by the Governor of Iowa on or about January 14, 2011, no project labor agreement (also known as a PLA), or similar, will be used on this Project. Iowa is a right to work state. No consultant, contractor, or employee shall be obligated to contract with or join any labor organization as a condition of performing work on this Project.

ARTICLE 14 TRADE CONTRACT DOCUMENTS

14.1 The Trade Contract Documents in existence at the time of execution of this Agreement are as follows:

RFBXXXXXXXXX Bid Package X

14.2 INTERPRETATION OF TRADE CONTRACT DOCUMENTS

14.2.1 The drawings and specifications are complementary. If Trade Contract Work is shown only on one but not on the other, the Trade Contractor shall perform the Trade Contract Work as though fully described on both consistent with the Trade Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

14.2.2 In case of conflicts between the drawings and specifications, the specifications shall govern. In any case of omissions or errors in figures, drawings or specifications, the Trade Contractor shall immediately submit the matter to the Owner for clarification. The Owner's clarifications are final and binding on all Parties, subject to an equitable adjustment in Trade Contract Time or Price pursuant to ARTICLE 6 and ARTICLE 7 or dispute resolution in accordance with ARTICLE 12.

14.2.3 Where figures are given, they shall be preferred to scaled dimensions.

14.2.4 Any terms that have well-known technical or trade meanings, unless otherwise specifically defined in this Agreement, shall be interpreted in accordance with their well-known meanings. This Agreement entered into as of the date entered in ARTICLE 1.

14.2.5 PRECEDENCE In case of any inconsistency, conflict or ambiguity among the Trade Contract Documents, the documents shall govern in the following order: (a) Trade Contract Change Orders and written amendments to this Agreement; (b) this Agreement; (c) subject to subsection 14.2.2 the drawings, specifications and addenda issued prior to the execution of this Agreement; (d) approved submittals; (e) information furnished by the Owner pursuant to subsection 4.1.3; (f) other documents listed in this Agreement. Among all the Trade Contract Documents, the term or provision that is most specific or includes the latest date shall control. Information identified in one Trade Contract Document and not identified in another shall not be considered to be a conflict or inconsistency.

This Agreement entered into as of the date entered in ARTICLE 1.

OWNER State of Iowa, Department of Administrative Services

DRAFT

ConsensusDocs™ 802 - Standard Form of Agreement Between Owner and Trade Contractor (CM is Owner's Agent) - © 2007, Revised March 2012. THIS DOCUMENT MAY HAVE BEEN MODIFIED FROM THE STANDARD LANGUAGE, and a report of modifications can be generated through the ConsensusDocs platform. Purchase of the document permits the user to print one contract for each party to the contract within one project only. You may only make copies of finalized documents for distribution to parties in direct connection with this contract. Any other uses are strictly prohibited.

Trade Contractor: *Contractor Name*

By: _____

(Authorized Representative)

Name:

Title:

Date:

Owner: State of Iowa - DAS

By: _____

(Authorized Representative)

Name:

Title:

Date:

END OF DOCUMENT.

DRAFT

ConsensusDocs™ 802 - Standard Form of Agreement Between Owner and Trade Contractor (CM is Owner's Agent) - © 2007, Revised March 2012. THIS DOCUMENT MAY HAVE BEEN MODIFIED FROM THE STANDARD LANGUAGE, and a report of modifications can be generated through the ConsensusDocs platform. Purchase of the document permits the user to print one contract for each party to the contract within one project only. You may only make copies of finalized documents for distribution to parties in direct connection with this contract. Any other uses are strictly prohibited.

SECTION 00 6000

PERFORMANCE AND PAYMENT BOND

PART 1 - GENERAL

1.01 PERFORMANCE AND PAYMENT BOND

A. Performance and payment bonds to be used on this project, ConsensusDocs 260 and 261 are attached for reference following this page. ConsensusDocs performance and payment bonds are not required (other standard forms are acceptable to the State of Iowa).

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION



CONSENSUSDOCS 260

PERFORMANCE BOND

This document was developed through a collaborative effort of organizations representing a wide cross-section of the design and construction industry. The organizations endorsing this document believe it represents a fair allocation of risk and responsibilities for all project participants.

Endorsing organizations recognize that this document must be reviewed and adapted to meet specific needs and applicable laws. This document has important legal and insurance consequences. You are encouraged to consult legal, insurance and surety advisors before completing or modifying this document. The software includes a notes section indicating where information is to be inserted to complete this document. Further information and endorsing organizations' perspectives are available at www.consensusdocs.org/guidebook.

For Use with ConsensusDOCS 200, Standard Form of Agreement and General Conditions Between Owner and Constructor (Where the Contract Price is a Lump Sum) and ConsensusDOCS 500, Standard Agreement and General Conditions Between Owner and Construction Manager.

The Owner, _____,(the "Owner") and the Constructor, _____,(the "Constructor") have entered into a Contract (the "Contract") dated _____ for _____(the "Project"). The Contract is incorporated by reference into this Performance Bond (the "Bond").

By virtue of this Bond, the Constructor as Principal and _____ as Surety ("Surety"), are bound to the Owner as Obligee in the maximum amount of _____ Dollars ($_____) (the "Bond Sum"). The Constructor and Surety hereby bind themselves, their heirs, executors,

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administrators, successors and assigns, jointly and severally, as provided herein.

1. GENERAL CONDITIONS It is the condition of this Bond that if the Constructor performs its Contract obligations (the "Work"), the Surety's obligations under this Bond are null and void. Otherwise the Surety's obligations shall remain in full force and effect. The Surety waives any requirement to be notified of alterations or extensions of time made by the Owner in the Contract. The Owner may not invoke the provisions of this Bond unless the Owner has performed its obligations pursuant to the Contract. Upon making demand on this Bond, the Owner shall make the Contract Balance (the total amount payable by the Owner to the Constructor pursuant to the Contract less amounts properly paid by the Owner to the Constructor) available to the Surety for completion of the Work.

2. SURETY OBLIGATIONS If the Constructor is in default pursuant to the Contract and the Owner has declared the Constructor in default, the Surety promptly may remedy the default or shall:

a. Complete the Work, with the consent of the Owner, through the Constructor or otherwise;

b. Arrange for the completion of the Work by a Constructor acceptable to the Owner and secured by performance and payment bonds equivalent to those for the Contract issued by a qualified surety. The Surety shall make available as the Work progresses sufficient funds to pay the cost of completion of the Work less the Contract Balance up to the Bond Sum; or

c. Waive its right to complete the Work and reimburse the Owner the amount of its reasonable costs, not to exceed the Bond Sum, to complete the Work less the Contract Balance.

3. DISPUTE RESOLUTION All disputes pursuant to this Bond shall be instituted in any court of competent jurisdiction in the location in which the Project is located and shall be commenced within two years after default of the Constructor or Substantial Completion of the Work, whichever occurs first. If this provision is prohibited by law, the minimum period of limitation available to sureties in the jurisdiction shall be applicable.

This Bond is entered into as of _____.

SURETY _____(seal)

By: .....

Print Name: _____

Print Title: _____

(Attach Power of Attorney)

Witness: .....

CONSTRUCTOR _____(seal)

By: .....

Print Name: _____

Print Title: _____

Witness: .....

(Additional signatures, if any, appear on attached page)

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CONSENSUSDOCS 261

PAYMENT BOND

This document was developed through a collaborative effort of organizations representing a wide cross-section of the design and construction industry. The organizations endorsing this document believe it represents a fair allocation of risk and responsibilities for all project participants.

Endorsing organizations recognize that this document must be reviewed and adapted to meet specific needs and applicable laws. This document has important legal and insurance consequences. You are encouraged to consult legal, insurance and surety advisors before completing or modifying this document. The software includes a notes section indicating where information is to be inserted to complete this document. Further information and endorsing organizations' perspectives are available at www.consensusdocs.org/guidebook.

For Use with ConsensusDOCS 200, Standard Form of Agreement and General Conditions Between Owner and Constructor (Where the Contract Price is a Lump Sum) and ConsensusDOCS 500, Standard Agreement and General Conditions Between Owner and Construction Manager.

The Owner, _____,(the "Owner ") and the Constructor, _____, (the "Constructor") have entered into a Contract (the "Contract") dated _____ for _____(the "Project"). The Contract is incorporated by reference into this Payment Bond (the "Bond").

By virtue of this Bond, the Constructor as Principal and _____as Surety ("Surety"), are bound to the Owner as Obligee in the maximum amount of _____Dollars ($_____) (the "Bond Sum"). The Constructor and Surety hereby bind themselves, their heirs, executors,

IMPORTANT: A vertical line in the margin indicates a change has been made to the original text. Prior to signing, recipients may wish to request from the party producing the document a "redlined" version indicating changes to the original text. Consultation with legal and insurance counsel and careful review of the entire document are strongly encouraged.
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administrators, successors and assigns, jointly and severally, as provided herein.

1. GENERAL CONDITIONS It is the condition of this Bond that if the Constructor promptly makes payment of all sums for all labor, materials, and equipment furnished for use in the performance of the work required by the Contract, the Surety's obligations pursuant to this Bond are null and void. Otherwise the Surety's obligations shall remain in full force and effect. The Surety waives any requirement to be notified of alterations or extensions of time made by the Owner in the Contract.

2. SURETY OBLIGATION Every Claimant who has not been paid in full before the expiration of a period of ninety (90) Days after such Claimant provided or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, may have a right of action on this Bond. The Surety's obligation to the Claimant(s) shall not exceed the Bond Sum.

3. LIMITATION OF ACTION No suit or action shall be commenced on this Bond by any Claimant:

a. Unless Claimant, other than one having a direct Contract with the Constructor, shall have given written notice to the Constructor, the Owner and the Surety within ninety (90) Days after the Claimant provided or performed the last of the work or labor, or furnished the last of the materials for which the claim is made, stating with substantial accuracy the amount claimed and the name of the Party to whom the materials were furnished, or for whom the work or labor was provided or performed. Such notice shall be served by any means which provides written third party verification of delivery to the Constructor at any place it maintains an office or conducts business, or served in any manner in which legal process may be served in the state in which the Project is located.

b. After the expiration of one (1) year from the date on which the Claimant last performed labor or furnished materials or equipment on the Project. If this provision is prohibited by law, the minimum period of limitation available to sureties in the jurisdiction shall be applicable.

c. Other than in any court of competent jurisdiction in the location in which the Project is located.

4. CLAIMANT A Claimant is defined as an individual or entity having a direct contract with the Constructor or having a contract with a subcontractor having a direct contract with the Constructor to furnish labor, materials or equipment for use in the performance of the Contract.

This Bond is entered into as of _____.

SURETY _____(seal)

By: .....

Print Name: _____

Print Title: _____

(Attach Power of Attorney)

Witness: .....

CONSTRUCTOR _____(seal)

By: .....

Print Name: _____

IMPORTANT: A vertical line in the margin indicates a change has been made to the original text. Prior to signing, recipients may wish to request from the party producing the document a "redlined" version indicating changes to the original text. Consultation with legal and insurance counsel and careful review of the entire document are strongly encouraged.

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Print Title: _____

Witness: .....

(Additional signatures, if any, appear on attached page)

IMPORTANT: A vertical line in the margin indicates a change has been made to the original text. Prior to signing, recipients may wish to request from the party producing the document a "redlined" version indicating changes to the original text. Consultation with legal and insurance counsel and careful review of the entire document are strongly encouraged.

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SECTION 01 1200

CONTRACT SUMMARY

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Project Information
B. Project Summary
C. Bid Scope Summary
D. Work Hour Restrictions
E. Access to Site
F. Coordination with Occupants
G. Rules for Construction Workers
H. Bid Package Instructions

1.02 PROJECT INFORMATION

A. Facility Name/Location: Clarinda Correctional Facility (CCF) 2000 N. 16th St., Clarinda, IA 51632
B. DAS Project #: 9223.00
C. Owner: State of Iowa, Department of Administrative Services, Hoover State Office Building, Level 3, 1305 East Walnut Street, Des Moines, IA 50319
D. Owner's Representative: Brad Tonyan, Iowa Department of Administrative Services, 109 SE 13th Street, Des Moines, IA 50319
E. Construction Manager: Brian Polzin and Rusty Richardson, The Samuels Group, 2929 Westown Parkway Suite 200, West Des Moines, IA 50266

1.03 PROJECT SUMMARY

A. The project includes the construction of a new kitchen and laundry building for the Clarinda Correctional Facility. Scope of the project includes general construction, concrete, masonry, precast, structural steel, EPDM roofing, food service equipment, fire suppression, plumbing, HVAC, electrical, communications, electronic safety/security, earthwork, paving, utilities, etc.
B. Target date to provide substantial completion is June 2, 2025.

1.04 BID SCOPE SUMMARY

A. Scope Applicable to All Bid Packages:
   1. The Contractor's Work includes all labor, supervision, materials, equipment, services, supplies, tools, facilities, transportation, hoisting, storage, receiving, licenses, inspections, certifications, overhead, profit, or other items required or reasonably inferable to properly and timely perform and complete all work and services to be performed by the Contractor pursuant to this Agreement. Unless specifically stated otherwise, incidental work required to accomplish the work of this Bid Package shall be included in the bid. This would include, but not be limited to, temporary facilities, protection of the work, security of equipment, materials, and work in progress, etc. **Contractor's Work shall be performed in accordance with the Drawings, Specification Divisions 00 and 01, and Specification sections applicable to each Contractor's scope**.
   2. The Contractor is responsible for all labor and equipment to unload, account for all material delivered, stock, and delivery for this scope of work. Storage and delivery of materials and equipment at the Site shall be permitted only to the extent approved in advance by the Construction Manager, and if anything so stored obstructs the progress

of any portion of the work, it shall be promptly removed or relocated by the Contractor without reimbursement.

3. On-site supervision by Prime Contractor at all times work by that contractor or their subcontractors/suppliers is taking place.
4. Provide all temporary facilities required for this scope of work including trailer, trailer power, telephone, secured storage, temporary power for work, temporary and task lighting for work, etc. as determined necessary by Contractor. Coordinate location of trailers, material storage and utility lines with Construction Manager. Limited space is available, and permission to bring any such facility or excess materials to the site shall be approved by the Construction Manager.
5. Contractor shall provide all equipment and tools for Contractor's own cleanup. Clean up shall be done at the end of every shift or more frequently if required for the Contractor to perform their work, for other Contractors to perform their work, as required by the Owner's operations, and at the discretion of the Construction Manager.
6. All turf, landscaping, and subgrade disturbances caused by equipment traffic or other activities related to the Contractor's scope shall be repaired or restored to proper conditions by the Contractor.
7. Protect adjacent existing building elements from damage from Scope of work. Repair existing building elements damaged during Contractor's Scope of work.
8. Work occurring in occupied areas of the prison can be shut down by the facility manager or construction manager at any time for noise, vibration, or any inconvenience to the facility's everyday operation. Coordinate disruptive work with the Construction Manager and give adequate notice for all shutdowns and inconvenient work. Work causing noise, vibration, or other interruption needs to be coordinated at least 72 hours before the start of work.
9. Work occurring in occupied areas of the prison will need to be performed at the convenience of the Owner. The work will likely need to be performed after normal working hours (nights) or on weekends. Any shutdown of an existing utility must be conducted during off hours.
10. Each Trade Contractor is responsible for protecting their work until acceptance by the owner. Each Trade Contractor is responsible for respecting the work completed by all other Trade Contractors and shall be responsible for replacing anything damaged.
11. Each Trade Contractor shall provide daily jobsite clean-up for debris and dust generated by the installation of their scope of work. Haul debris to the dumpster provided by the Construction Manager. Daily jobsite clean-up shall consist of all prime contractor's employees cleaning the work area for at least 30 minutes before leaving.
12. Each Trade Contractor shall provide all layout and surveying as required to complete their scope of work. The cost of testing and inspections shall be paid by the Owner as required by the Contract Documents. All testing and inspections shall be called for by each Trade Contractor and tests shall be coordinated with the Construction Manager. Retesting due to failed tests will be the responsibility of the Trade Contractor.
13. All work to be completed in accordance with the schedule and phasing included in the specification section and as noted in the Contract Documents. The contractor shall include additional mobilizations as required to meet the schedule and phasing as noted.
14. Each trade contractor is responsible to field verify all dimensions prior to fabrication of products.
15. Trade contractors and employees shall be responsible for following OSHA construction standards and compliance with such standards for the project.
16. Weekly meetings shall be conducted on site for construction activities, safety, scheduling, and overall project activities. A representative (Foreman, Lead Employee) from each bid package shall participate.

1.05 WORK HOUR RESTRICTIONS (Refer to Drawing G0.1 for zones A and B)

A. **Zone A (Construction Zone):** Gate opens at 6:30 AM and gate closes at 6:30 PM. (Monday through Friday). Standard Work hours are from 7:00 AM to 3:30 PM but can be extended to 6:30 PM, Monday through Friday. Saturday and Sunday work requests shall be submitted two weeks in advance to the CM's on-site superintendent and project manager.

B. **Zone B (Restricted Construction Zone With Tool Control):** Work hours are from 7:00 AM to 5:00 PM, Monday through Friday only. Saturday and Sunday construction is prohibited in this area. Tool control will be in effect for any work in the Secure Construction Zone area.

1.06 CONTRACTOR USE OF SITE AND PREMISES

A. Construction Operations: Limited to areas noted on Drawings.

B. Provide access to and from site as required by law and Owner:
   1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
   2. Do not obstruct roadways, sidewalks, or other public ways without permission of Owner and permit if required.

C. Facility will be occupied at all times during duration of work. Contractor personnel shall conduct themselves in an agreeable manner at all times. Failure to do so may result in removal from the work site.

D. Parking in the West Parking lot of the Clarinda Correctional Facility is off limits. Contractors shall park in the designated parking areas noted on the project drawings and/or as directed by the construction manager and correctional facility.

E. **All Trade Contractors shall be responsible for the cleanup of their own work. Provide means and methods to ensure construction debris and materials are collected and removed to dumpsters on a daily basis.**

F. All ladders shall be taken down at the end of the workday and secured with locking devices.

1.07 OWNER OCCUPANCY

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

B. Cooperate with the Owner to minimize conflict and facilitate the Owner's operations.

C. Schedule the Work to accommodate Owner occupancy.

D. Coordinate disruption of utilities, fire alarm system, electrical system, plumbing/HVAC systems, etc. with the facility a minimum of 72 hours prior to commencement of any work.

1.08 RULES FOR CONSTRUCTION WORKERS

A. The staff of the State of Iowa has a responsibility to protect the public by providing a secure environment. All work site rules must be followed to the letter, at all times.

B. All construction workers must have a background check completed prior to entering the campus to perform work.

C. Hot Work Permit Processes and Fire Watch, when necessary, will be adhered to for this project.

D. All State properties are tobacco-free. No smoking will be permitted or tolerated on campus unless in designated areas.

E. You are permitted access only to the work site and no other area of the institution.

F. **No drugs, alcohol, or firearms are allowed on the work site.**

G. Do not leave money, drugs, alcohol, or firearms in your personal vehicle.

H. Company and personal vehicles are to be parked and locked in designated or authorized area of the work.

I. Secure all tools at the end of the day.

J. Maintain control of all tools, supplies, and debris at all times during the work.
K. Never leave keys in any vehicle. If a security officer finds keys in a vehicle, they are under orders to turn them in to a security supervisor.
L. Do not give anything to residents or take anything from residents; if they offer, inform your supervisor.
M. Secure all tools at the end of each day. Never leave tools unattended. All tools shall be checked in at the beginning of the day and checked out at the end of the day. If security officers find loose tools, they are under orders to turn them into their supervisor.
N. All delivery vehicles must go directly to the job site. Extra time should be anticipated for all deliveries. Provide 24-hour notice to the facility of deliveries.
O. Contractors shall be responsible for the coordination and receiving of all deliveries. The Clarinda Correctional Facility shall not be responsible for receiving of contractor related materials, equipment, or deliveries.
P. During an emergency, follow the instructions of the security staff.
Q. Contractors shall wear clothing of a different color, pattern, fashion, etc., to distinguish themselves from inmates. **High Visibility Orange shall not be worn by contractors.**
R. Contractors shall conduct all construction work under OSHA compliance.
S. **All ladders shall be taken down at the end of the workday and secured with locking devices**.

1.09 BID PACKAGE INSTRUCTIONS –

A. **Bid Package #01 – General Construction:** Trade Contractor shall include all of the following, but not limited to, as part of the contract:
1. Provide all labor, material, and equipment for the Clarinda Kitchen & Laundry Addition project to provide and install Concrete, Masonry, Metals, Woods, Plastic, Composites, Thermal/Moisture Protection, Openings, Finishes, Specialties, and Furnishings based on all contract drawings and specifications.
2. Includes Divisions 00 and 01 including project management and supervision during construction activities associated with this Scope of Work. Contractor's Work shall be performed in accordance with the Drawings, Specification Divisions 00 and 01, and Specification sections applicable to each Contractor's scope.
3. Includes:

DIVISION 02 - DEMOLITION
- 02 4100 Demolition (As Applies to this Bid Package)

DIVISION 03 - CONCRETE
- 03 3000 Cast-in-Place Concrete
- 03 3511 Concrete Floor Finishes

DIVISION 03 CLARIFICATIONS*:*
- Includes installation of embedded plates supplied by precast contractor.
- Includes provide and install of grout and reinforced concrete wearing slabs at coolers and freezers after F.S.E.C. installation of cooler and freezer insulated screed.
- Includes excavation and backfill of footings and foundations.
- Excess spoils of footings and foundations excavation (fill material, organics, black dirt) shall be stocked piled at a location noted on site.
- Includes housekeeping pads, mechanical pads, generator pad, and site bollards.

DIVISION 04 - MASONRY
- 04 2000 Unit Masonry

DIVISION 04 CLARIFICATIONS*:*
- Includes installation of embedded plates supplied by precast contractor.

- Coordinate location of mixing tower and water access with CM.

DIVISION 05 - METALS

- 05 1200 Structural Steel Framing
- 05 2100 Steel Joist Framing
- 05 3100 Steel Decking
- 05 4000 Cold-Formed Metal Framing
- 05 5000 Metal Fabrications
- 05 5100 Metal Stairs

DIVISION 05 CLARIFICATIONS*:*

- Includes coordination with precast/precast erector for removal of bracing.

DIVISION 06 – WOOD, PLASTICS, AND COMPOSITES

- 06 1000 Rough Carpentry
- 06 4100 Architectural Wood Casework

DIVISION 06 CLARIFICATIONS*:*

- Includes provide and install of treated wood roof curbs for walk-in freezers and coolers condensing units
- Includes roof blocking and plywood at the roof area and parapet walls.

DIVISION 07 – THERMAL AND MOISTURE PROTECTION

- 07 2100 Thermal Insulation
- 07 2500 Weather Barriers
- 07 4213.19 Insulated Metal Wall Panels
- 07 8400 Firestopping (As Applies to this Bid Package)
- 07 9200 Joint Sealants (As Applies to this Bid Package)

DIVISION 07 CLARIFICATIONS*:*

- Includes provide and install vapor barrier and slab insulation after installation of walk-in coolers and freezers insulated screed.

DIVISION 08 - OPENINGS

- 08 1113 Hollow Metal Doors and Frames
- 08 3323 Overhead Coiling Doors
- 08 7100 Door Hardware
- 08 8000 Glazing

DIVISION 08 CLARIFICATIONS*:*

- Coordinate prep of doors and frames with controls and electrical.
- Coordinate keying and door prep requirements with owner.

DIVISION 09 - FINISHES

- 09 2116 Gypsum Board Assemblies
- 09 2216 Non-structural Metal Framing
- 09 3000 Tiling
- 09 5100 Acoustical Ceilings
- 09 9123 Interior Painting
- 09 9600 High-Performance Coatings

DIVISION 10 - SPECIALTIES

- 10 1401 Code-Required Signage
- 10 2600 Wall and Door Protection
- 10 2800 Toilet, Bath, and Laundry Accessories
- 10 4400 Fire Protection Specialties

DIVISION 11 - EQUIPMENT

- 11 1900 Detention Security Equipment
- 11 1910 Detention Hollow Metal

DIVISION 12 - FURNISHINGS

- 12 3600 Countertops

4. Bid Package #01 Unit Prices:

A. **Unit Price #01A** – Over Ex/Backfill with Engineered Fill (1 Cubic yard): Trade Contractor shall include all of the following, but not limited to, as part of the contract:
1. Provide a unit cost to excavate one cubic yard of soils and place one cubic yard of engineered compacted fill for over excavation requirements.
2. Reference Team Services Geotechnical Evaluation Report dated April 12, 2022.
3. Excess spoils (fill material, organics, black dirt) shall be stocked piled at a location noted on site.
4. Unit prices include all necessary material, plus cost for delivery, installation, insurance, overhead, and profit.
5. Owner reserves the right to reject Contractor's measurements of work in place that involves use of established unit prices and to have this work measured, at the Owner's expense, by an independent surveyor acceptable to the Contractor.

B. **Unit Price #01B** – Over Ex/Backfill with Lean Concrete (1 Cubic yard): Trade Contractor shall include all of the following, but not limited to, as part of the contract:
1. Provide a unit cost to excavate one cubic yard of soils and place one cubic yard of lean concrete fill for over excavation requirements.
2. Reference Team Services Geotechnical Evaluation Report dated April 12, 2022.
3. Excess spoils (fill material, organics, black dirt) shall be stocked piled at a location noted on site.
4. Unit prices include all necessary material, plus cost for delivery, installation, insurance, overhead, and profit.
5. Owner reserves the right to reject Contractor's measurements of work in place that involves use of established unit prices and to have this work measured, at the Owner's expense, by an independent surveyor acceptable to the Contractor.

5. Bid Package #01 Alternate:

A. **Alternate #1** – Laundry Equipment Opening Surrounds: Trade Contractor shall include all of the following, but not limited to, as part of the contract:
1. Provide all labor, material, and equipment for the opening surrounds as noted in detail 17/A8.1 for washer units and dryer units at Laundry Room 1204.
2. Reference Plans and specifications for additional information. General Information included on Drawing G0.1.
3. Reference Drawing A1.1 for location of Security and Screen Walls and Doors.
4. Includes Section 11 1940 Security and Screen Walls and Doors.
5. Include deduct off building elements provided in base bid for washer and dryer openings.
6. Coordinate work with other trades for installation.
7. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
8. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
9. Execute accepted alternates under the same conditions as other work of the Contract

6. **ADDITIONAL CLARIFICATIONS BID PACKAGE #01:**

A. Follow working hours as noted in the specifications for Zone A (Construction Zone) and Zone B (Restricted Construction Zone with Tool Control) – coordinate with the Construction Manager.
B. All activities must be coordinated with the Construction Manager.
C. All activities must be coordinated with the other Trade Contractors.
D. Includes all temporary barricades, enclosures, and protection for this Bid Package Scope of Work.
E. Includes all core drilling, penetrations, cutting, and patching required to complete the work.
F. Includes daily cleanup, removal, and lawful disposal of all scrap materials and debris generated from the site operation and installation of the work included in this Bid Package.
G. Debris shall be removed during normal construction hours. Dumpsters are supplied by Owner unless clarified in Bid Package.
H. Includes all caulking/sealant as it pertains to this Bid Package.
I. Level 2, Mechanical Room Louver OAL-1: Section of insulated wall panel below Louver OAL-1 shall be installed after all AHU and DOAS units have been installed by HVAC contractor. Coordinate install with all trades.

B. **Bid Package #02 – Precast:** Trade Contractor shall include all of the following, but not limited to, as part of the contract:

1. Provide all labor, material, and equipment for the Clarinda Kitchen & Laundry Addition project to provide and install Precast Architectural Concrete based on all contract drawings and specifications.
2. Includes Divisions 00 and 01 including project management and supervision during construction activities associated with this Scope of Work. Contractor's Work shall be performed in accordance with the Drawings, Specification Divisions 00 and 01, and Specification sections applicable to each Contractor's scope.
3. Includes:

DIVISION 03 – CONCRETE
- 03 4500 Precast Architectural Concrete

DIVISION 07 – THERMAL AND MOISTURE PROTECTION
- 07 9200 Joint Sealants (As Applies to this Bid Package)

4. **ADDITIONAL CLARIFICATIONS BID PACKAGE #02:**

A. Follow working hours as noted in the specifications for Zone A (Construction Zone) and Zone B (Restricted Construction Zone with Tool Control) – coordinate with the Construction Manager.
B. All activities must be coordinated with the Construction Manager.
C. All activities must be coordinated with the other Trade Contractors.
D. Coordinate with all trade contractors for location of embeds and openings.
E. Includes all temporary barricades, enclosures, and protection for this Bid Package Scope of Work.
F. Precast Contractor to provide site specific safety plan.
G. Includes all core drilling, penetrations, cutting, and patching required to complete the work.
H. Includes daily cleanup, removal, and lawful disposal of all scrap materials and debris generated from the site operation and installation of the work included in this Bid Package.
I. Debris shall be removed during normal construction hours. Dumpsters are supplied by Owner unless clarified in Bid Package.
J. Preinstallation Meeting: Convene one week prior to commencing work.
K. Includes all caulking/sealant as it pertains to this Bid Category. Seal all precast perimeter and intermediate joints (interior and exterior) in accordance with Section 07 9200.
L. Includes shims and 1" grout fill at precast to foundation wall.

M. Includes Embed plates (top of foundation walls). Installed by others.
N. Includes bracing, bracing anchoring needs, and removal of these components.
O. Coordinate removal of precast bracing components with steel erection.
P. Coordinate installation of 12' x 12' knock out panel area at south wall elevation with construction manager. The tentative date of knock out panel installation is May 2025.

C. **Bid Package #03 – Roofing/Gutters/Downspouts:** Trade Contractor shall include all of the following, but not limited to, as part of the contract:

1. Provide all labor, material, and equipment for the Clarinda Kitchen & Laundry Addition project to provide and install EPDM roofing system, sheet metal flashing/trim, parapet cap, gutters, and downspouts based on all contract drawings and specifications.
2. Includes Divisions 00 and 01 including project management and supervision during construction activities associated with this Scope of Work. Contractor's Work shall be performed in accordance with the Drawings, Specification Divisions 00 and 01, and Specification sections applicable to each Contractor's scope.
3. Includes:

DIVISION 07 – THERMAL AND MOISTURE PROTECTION

- 07 5300 Elastomeric Membrane Roofing
- 07 6200 Sheet Metal Flashing and Trim
- 07 7100 Roof Specialties
- 07 7123 Manufactured Gutters and Downspouts
- 07 7200 Roof Accessories
- 07 7260 Roof Fall Protection
- 07 9200 Joints Sealants (As Applies to this Bid Package)

4. **ADDITIONAL CLARIFICATIONS BID PACKAGE #03:**

A. Follow working hours as noted in the specifications for Zone A (Construction Zone) and Zone B (Restricted Construction Zone with Tool Control) – coordinate with the Construction Manager.
B. All activities must be coordinated with the Construction Manager.
C. All activities must be coordinated with the other Trade Contractors.
D. Includes all temporary barricades, enclosures, and protection for this Bid Package Scope of Work.
E. Includes all core drilling, penetrations, cutting, and patching required to complete the work.
F. Includes daily cleanup, removal, and lawful disposal of all scrap materials and debris generated from the site operation and installation of the work included in this Bid Package.
G. Debris shall be removed during normal construction hours. Dumpsters are supplied by Owner unless clarified in Bid Package.
H. Includes all caulking/sealant as it pertains to this Bid Package.
I. Includes pre-finished tamper proof gutter covers.
J. Includes saw cutting of reveal for metal flashing at connection to existing building.
K. Turn over Roof Fall Protection to owner.

D. **Bid Package #04 – Food Service:** Trade Contractor shall include all of the following, but not limited to, as part of the contract:

1. Provide all labor, material, and equipment for the Clarinda Kitchen & Laundry Addition project to provide and install food service equipment based on all contract drawings and specifications.
2. Includes Divisions 00 and 01 including project management and supervision during construction activities associated with this Scope of Work. Contractor's Work shall be

performed in accordance with the Drawings, Specification Divisions 00 and 01, and Specification sections applicable to each Contractor's scope

3. Includes:

DIVISION 07 – THERMAL AND MOISTURE PROTECTION

- 07 8400 Firestopping (As Applies to this Bid Package)
- 07 9200 Joints Sealants (As Applies to this Bid Package)

DIVISION 11 - EQUIPMENT

- 11 4000 Foodservice Equipment

4. Bid Package #04 Alternate:

A. **Alternate #2** – Alternate Bakery Equipment: Trade Contractor shall include all of the following, but not limited to, as part of the contract:

1. Provide all labor, material, and equipment to supply and install bakery equipment.
2. Reference Plans and specifications for additional information. General Information included on Drawing G0.1.
3. Final Electrical, Plumbing, and HVAC connections by others. Coordinate work.
4. Coordinate work with other trades for installation.
5. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
6. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
7. Execute accepted alternates under the same conditions as other work of the Contract.

5. **ADDITIONAL CLARIFICATIONS BID PACKAGE #04:**

A. Follow working hours as noted in the specifications for Zone A (Construction Zone) and Zone B (Restricted Construction Zone with Tool Control) – coordinate with the Construction Manager.
B. All activities must be coordinated with the Construction Manager.
C. All activities must be coordinated with the other Trade Contractors.
D. Includes all temporary barricades, enclosures, and protection for this Bid Package Scope of Work.
E. Includes daily cleanup, removal, and lawful disposal of all scrap materials and debris generated from the site operation and installation of the work included in this Bid Package.
F. Debris shall be removed during normal construction hours. Dumpsters are supplied by Owner unless clarified in Bid Package.
G. Includes all caulking/sealant as it pertains to this Bid Category.

E. **Bid Package #05 – Fire Suppression:** Trade Contractor shall include all of the following, but not limited to, as part of the contract:

1. Provide all labor, material, and equipment for the Clarinda Kitchen & Laundry Addition project to provide and install Fire Suppression system based on all contract drawings and specifications.
2. Includes Divisions 00 and 01 including project management and supervision during construction activities associated with this Scope of Work. Contractor's Work shall be performed in accordance with the Drawings, Specification Divisions 00 and 01, and Specification sections applicable to each Contractor's scope.
3. Includes Fire Suppression items noted in the Food Service Equipment MEP Drawings.
4. Includes:

DIVISION 02 – EXISTING CONDITIONS

- 02 4100 Demolition (As Applies to this Bid Package)

DIVISION 07 – THERMAL AND MOISTURE PROTECTION

- 07 8400 Firestopping (As Applies to this Bid Package)
- 07 9200 Joints Sealants (As Applies to this Bid Package)

DIVISION 21 – FIRE SUPPRESSION

- 21 0500 Basic Fire Suppression Requirements
- 21 0505 Fire Suppression Demolition for Remodeling
- 21 0529 Fire Suppression Supports and Anchors
- 21 1300 Fire Protection Systems

5. **ADDITIONAL CLARIFICATIONS BID PACKAGE #05:**
   A. Follow working hours as noted in the specifications for Zone A (Construction Zone) and Zone B (Restricted Construction Zone with Tool Control) – coordinate with the Construction Manager.
   B. All activities must be coordinated with the Construction Manager.
   C. All activities must be coordinated with the other Trade Contractors.
   D. Includes all temporary barricades, enclosures, and protection for this Bid Package Scope of Work.
   E. Includes all core drilling, penetrations, cutting, and patching required to complete the work.
   F. Includes daily cleanup, removal, and lawful disposal of all scrap materials and debris generated from the site operation and installation of the work included in this Bid Package.
   G. Debris shall be removed during normal construction hours. Dumpsters are supplied by Owner unless clarified in Bid Package.
   H. Includes firestopping and sealant associated to this contractor's scope of work.
   I. Includes removal and resetting of existing ceiling tile for work associated to this bid package.
   J. Submit all shop drawings to the State Fire Marshal office (SFM) for approval. Includes all fees associated with permits and inspections.

F. **Bid Package #06 – Plumbing and HVAC:** Trade Contractor shall include all of the following Scope of Work, but not limited to, as part of the contract:
   1. Provide all labor, material, and equipment for the Clarinda Kitchen & Laundry Addition project to provide and install complete Plumbing and Heating/Ventilating/Air-Conditioning (HVAC) systems based on all contract drawings and specifications.
   2. Includes Divisions 00 and 01 including project management and supervision during construction activities associated with this Scope of Work. Contractor's Work shall be performed in accordance with the Drawings, Specification Divisions 00 and 01, and Specification sections applicable to each Contractor's scope.
   3. Includes Mechanical, Plumbing, and HVAC items noted in the Food Service Equipment MEP Drawings.
   4. Includes:

DIVISION 02 – EXISTING CONDITIONS

- 02 4100 Demolition (As Applies to this Bid Package)

DIVISION 07 – THERMAL AND MOISTURE PROTECTION

- 07 8400 Firestopping (As Applies to this Bid Package)
- 07 9200 Joints Sealants (As Applies to this Bid Package)

DIVISION 22 – PLUMBING

- 22 0500 Basic Plumbing Requirements
- 22 0505 Plumbing Demolition for Remodeling
- 22 0513 Motors
- 22 0516 Plumbing Expansion Compensation

- 22 0529 Plumbing Supports and Anchors
- 22 0548 Plumbing Vibration Isolation/Vibration Isolation Submittal Form
- 22 0553 Plumbing Identification
- 22 0716 Plumbing Equipment Insulation
- 22 0719 Plumbing Piping Insulation
- 22 0900 Instrumentation
- 22 1000 Plumbing Piping
- 22 1023 Natural Gas Piping
- 22 1030 Plumbing Specialties
- 22 1200 Tanks - Plumbing
- 22 1519 Compressed Air Systems
- 22 3000 Plumbing Equipment
- 22 4000 Plumbing Fixtures

DIVISION 23 – HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)

- 23 0500 Basic HVAC Requirements
- 23 0505 HVAC Demolition for Remodeling
- 23 0513 Motors
- 23 0529 HAVC Supports and Anchors
- 23 0530 Roof Support and Wind Bracing
- 23 0548 HVAC Vibration Isolation, Vibration isolation Submittal Form
- 23 0553 HVAC Identification
- 23 0593 Testing, Adjusting, and Balancing
- 23 0713 Ductwork Insulation
- 23 0719 HVAC Piping Insulation
- 23 0800 HVAC Commissioning Requirements
- 23 0900 Controls
- 23 0913 Instrumentation
- 23 2300 Refrigeration Piping and Specialties
- 23 3100 Ductwork
- 23 3300 Ductwork Accessories
- 23 3423 Power Ventilators
- 23 3600 Air Terminal Units
- 23 3700 Air Inlets and Outlets
- 23 4000 Air Cleaning
- 23 6213 Air Cooled Condensing Units
- 23 7313 Indoor Modular Air Handling Units
- 23 8200 Terminal Heat Transfer Units

5. Bid Package #06 Alternates:

A. **Alternate #1** – Laundry Equipment Plumbing and HVAC: Trade Contractor shall include all of the following, but not limited to, as part of the contract:

1. Provide all labor, material, and equipment for the plumbing and HVAC needs to supply and install washer units and dryer units for Laundry Room 1204.
2. Includes supply of washer units and dryer units.
3. Reference Plans and specifications for additional information. General Information included on Drawing G0.1.
4. Coordinate work with other trades for installation.
5. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
6. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
7. Execute accepted alternates under the same conditions as other work of the Contract.

B. **Alternate #2** – Alternate Bakery Plumbing and HVAC: Trade Contractor shall include all of the following, but not limited to, as part of the contract:
1. Provide all labor, material, and equipment for the plumbing and HVAC needs for this alternate.
2. Reference Plans and specifications for additional information. General Information included on Drawing G0.1.
3. Coordinate work with other trades for installation.
4. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
5. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
6. Execute accepted alternates under the same conditions as other work of the Contract.

6. **ADDITIONAL CLARIFICATIONS BID PACKAGE #06:**
A. Follow working hours as noted in the specifications for Zone A (Construction Zone) and Zone B (Restricted Construction Zone with Tool Control) – coordinate with the Construction Manager.
B. All activities must be coordinated with the Construction Manager.
C. All activities must be coordinated with the other Trade Contractors.
D. Coordinate with the local utilities.
E. Includes all temporary barricades, enclosures, and protection for this Bid Package Scope of Work.
F. Includes daily cleanup, removal, and lawful disposal of all scrap materials and debris generated from the site operation and installation of the work included in this Bid Package.
G. Includes all core drilling, penetrations, cutting, and patching required to complete the work.
H. Includes firestopping and sealant associated to this contractor's scope of work.
I. Includes removal and resetting of existing ceiling tile for work associated to this bid package.
J. Cover ends of pipes and ductwork while stored and after installation.
K. Provide TAB services as called out in documents.
L. Coordinate and provide access to the commissioning agent for equipment to be reviewed.
M. Level 2, Mechanical Room Louver OAL-1: Section of insulated wall panel below Louver OAL-1 shall be installed after all AHU and DOAS units have been installed by HVAC contractor. Coordinate install with all trades.

G. **Bid Package #07 – Electrical:** Trade Contractor shall include all of the following Scope of Work, but not limited to, as part of the contract:
1. Provide all labor, material, and equipment for the Clarinda Kitchen & Laundry Addition project to provide and install complete electrical, communications, and electronic safety/security systems based on all contract drawings and specifications.
2. Includes Divisions 00 and 01 including project management and supervision during construction activities associated with this Scope of Work. Contractor's Work shall be performed in accordance with the Drawings, Specification Divisions 00 and 01, and Specification sections applicable to each Contractor's scope.
3. Includes Electrical items noted in the Food Service Equipment MEP Drawings.
4. Includes:

DIVISION 02 – EXISTING CONDITIONS

- 02 4100 Demolition (As Applies to this Bid Package)

DIVISION 07 – THERMAL AND MOISTURE PROTECTION

- 07 8400 Firestopping (As Applies to this Bid Package)
- 07 9200 Joints Sealants (As Applies to this Bid Package)

DIVISION 26 – ELECTRICAL

- 26 0500 Basic Electrical Requirements
- 26 0505 Electrical Demolition for Remodeling
- 26 0513 Wire and Cable
- 26 0526 Grounding and Bonding
- 26 0527 Supporting Devices
- 26 0533 Conduit and Boxes
- 26 0553 Electrical Identification
- 26 0573 Power System Study
- 26 0800 Commissioning of Electrical
- 26 0913 Power Monitoring and Control System
- 26 0933 Lighting Control Systems
- 26 2200 Dry Type Transformers
- 26 2416 Panelboards
- 26 2419 Motor Control
- 26 2726 Wiring Devices
- 26 2813 Fuses
- 26 2816 Disconnect Switches
- 26 2923 Variable Frequency Drives
- 26 3213 Packaged Engine Generator Systems
- 26 3600 Transfer Switch
- 26 4100 Lightning Protection Systems
- 26 4300 Surge Protection Devices
- 26 5119 LED Lighting

DIVISION – 27 COMMUNICATIONS

- 27 0500 Basic Communications Systems Requirements
- 27 0505 Technology Demolition For Remodeling
- 27 0526 Communications Bonding
- 27 0528 Interior Communication Pathways
- 27 0553 Identification and Administration
- 27 1100 Communication Equipment Rooms (CER)
- 27 1500 Horizontal Cabling Requirements
- 27 1710 Testing
- 27 1720 Structured Cabling System Warranty
- 27 5113 Paging Systems

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

- 28 0500 Basic Electronic Safety and Security Systems
- 28 1300 Electronic Access Control
- 28 2300 Video Surveillance 28 2300 Video Surveillance (VIDEO SURVEILLANCE EQUIPMENT PROVIDED AND INSTALLED BY OWNER. SPECIFICATION PROVIDED AS REFERENCE ONLY".
- 28 3100 Fire Alarm and Detection Systems

5. Bid Package #07 Alternates:
   A. **Alternate #1** – Laundry Equipment Electrical: Trade Contractor shall include all of the following, but not limited to, as part of the contract:
      1. Provide all labor, material, and equipment for electrical needs for Laundry Equipment (Washers and Dryers) for Laundry Room 1204.
      2. Reference Plans and specifications for additional information. General Information included on Drawing G0.1.

3. Coordinate work with other trades for installation.
4. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
5. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
6. Execute accepted alternates under the same conditions as other work of the Contract.

B. **Alternate #2** – Alternate Bakery Equipment Electrical: Trade Contractor shall include all of the following, but not limited to, as part of the contract:
1. Provide all labor, material, and equipment for electrical needs for Bakery Equipment.
2. Reference Plans and specifications for additional information. General Information included on Drawing G0.1.
3. Coordinate work with other trades for installation.
4. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
5. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
6. Execute accepted alternates under the same conditions as other work of the Contract.

6. **ADDITIONAL CLARIFICATIONS BID PACKAGE #07**:

A. Follow working hours as noted in the specifications for Zone A (Construction Zone) and Zone B (Restricted Construction Zone with Tool Control) – coordinate with the Construction Manager.
B. All activities must be coordinated with the Construction Manager.
C. All activities must be coordinated with all other Trade Contractors.
D. Coordinate with the local utilities.
E. Includes all temporary barricades, enclosures, and protection for this Bid Package Scope of Work.
F. Includes temporary lighting and power for the building addition. Connect to existing power located on second floor Administration Building electrical room. Temp. lighting and temp. power to be OSHA compliant. Provide minimum qty. of two (2), 200 amp. temporary service panels with power outlets for the construction area.
G. Provide temporary lighting with footcandle requirements per OSHA standards.
H. Dumpsters supplied by Owner unless clarified in Bid Package.
I. Includes daily cleanup, removal, and lawful disposal of all scrap materials and debris generated from the site operation and installation of the work included in this Bid Package.
J. Includes all core drilling, penetrations, cutting, and patching required to complete the work.
K. Includes firestopping and sealant associated to this contractor's scope of work.
L. Includes removal and resetting of existing ceiling tile for work associated to this bid package.
M. Obtain electrical permit and coordinate electrical inspections via the State Fire Marshall Office (SFM).

H. **Bid Package #08 – Civil:** Trade Contractor shall include all of the following Scope of Work, but not limited to, as part of the contract:
1. Provide all labor, material, and equipment for the Clarinda Kitchen & Laundry Addition project for earthwork, exterior improvements, and utilities based on all contract drawings and specifications.

2. Includes Divisions 00 and 01 including project management and supervision during construction activities associated with this Scope of Work. Contractor's Work shall be performed in accordance with the Drawings, Specification Divisions 00 and 01, and Specification sections applicable to each Contractor's scope.
3. Includes:

DIVISION 02 – EXISTING CONDITIONS
- 02 4100 Demolition (As Applies to this Bid Package)

DIVISION 31 – EARTHWORK
- 31 1000 Site Clearing
- 31 2000 Earthwork
- 31 2005 Earth Moving for Building
- 31 2333 Trenching and Backfilling (As Applies to this Bid Package)
- 31 3500 Erosion and Sediment Control

DIVISION 32 – EXTERIOR IMPROVEMENTS
- 32 1123 Aggregate Base Courses
- 32 1313 Concrete Paving
- 32 1373 Pavement Joint Sealants
- 32 1723 Pavement Markings
- 32 9119 Landscape Grading
- 32 9219 Seeding

DIVISION 33 - UTILITIES
- 33 3100 Sanitary Sewerage Piping
- 33 3101 Sanitary Sewer Manholes
- 33 4000 Storm Sewer and Drainage
- 33 4900 Storm Drainage Structures

4. Bid Package #08 Unit Prices:

A. **Unit Price #08A** - Over Ex/Backfill with Engineered Fill (1 Cubic Yard): Trade Contractor shall include all of the following, but not limited to, as part of the contract:
   1. Provide a unit cost to excavate one cubic yard of soil and place one cubic yard of engineered compacted fill for over excavation requirements.
   2. Reference Team Services Geotechnical Evaluation Report dated April 12, 2022.
   3. Excess spoils (fill material, organics, black dirt) shall be stocked piled at a location noted on site.
   4. Unit prices include all necessary material, plus cost for delivery, installation, insurance, overhead, and profit.
   5. The owner reserves the right to reject Contractor's measurements of work in place that involves use of established unit prices and to have this work measured, at the Owner's expense, by an independent surveyor acceptable to the Contractor.

5. **ADDITIONAL CLARIFICATIONS BID PACKAGE #08:**
   A. Follow working hours as noted in the specifications for Zone A (Construction Zone) and Zone B (Restricted Construction Zone with Tool Control) – coordinate with the Construction Manager.
   B. All activities must be coordinated with the Construction Manager.
   C. All activities must be coordinated with the other Trade Contractors.
   D. Successful bidders will have access to a full set of construction documents ("CD") via Procore.
   E. Includes all temporary barricades, enclosures, and protection for this Scope of Work.
   F. Includes all safety material necessary to protect personnel in and from open trenches and excavations. Excavations shall be closed as soon as possible.

G. Demolition and offsite disposal of existing storm structures and piping shall be included and be at the expense of this bid package.
H. Excess spoils (fill material, organics, black dirt) shall be stocked piled at a location noted on site.
I. Demolished concrete paving shall be stockpiled at a location noted on site.
J. Dumpsters supplied by Owner unless clarified in Bid Package.
K. Includes daily cleanup, removal, and lawful disposal of all scrap materials and debris generated from the site operation and installation of the work included in this Bid Package.
L. Includes all cutting and patching required to complete the work.
M. Trenching and backfilling of footings and foundations by others.

I. **Work Performed by Owner:** The Clarinda Correctional Facility will perform the following work items:
1. Relocate all moveable furniture, fixtures, and equipment (FF&E), including window treatments; and personal materials from each sequenced work area prior to demolition and construction activities and after new construction is completed.
2. Provide and install temporary walkway and security fence along existing cell pod.
3. Provide and install 16’ Wide sliding gate/with motor at sally port road.
4. Provide and install temporary gates at the south perimeter security fence.
5. Provide and install west temporary road and west trailer pad area as noted on drawing C2.1.
6. Site snow removal will be performed by the Owner.

J. **Owner Furnished Products:** The Clarinda Correctional Facility will provide the following materials for installation by the contractor:
1. No items noted.

PART 2 - PRODUCTS – NOT USED
PART 3 - EXECUTION – NOT USED

END OF SECTION

SECTION 01 2500

SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Substitution Procedures
B. Request for Substitution form

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 SUBSTITUTION PROCEDURES

A. Where the Bidding Documents stipulate a specific product be provided by naming one or more manufacturer and model, a substitute product will be considered when written request is received by the date and time identified in Section 00 1113 NOTICE TO BIDDERS. Substitution requests will be considered for all products, even if the specification does not include a statement such as “or equal,” “equal to,” “equivalent to,” or “basis of design,” unless noted otherwise.
B. References in the Bidding Documents to brand or trade names are intended to illustrate the general characteristics of the item and not to limit competition unless noted otherwise.
C. The written request shall be on the “Request for Substitution” form included in the Project Manual. If no such form is included, the request shall be provided on the letterhead of the company making the request.
D. Substitution requests received after the specified date will be viewed in the context of a Change Order to the Contract, and consideration will only be given in the event a product becomes unavailable or not practical due to no fault of the Contractor, or the substitution is substantially to the Owner’s advantage (equal product for less cost or higher quality product at no change in Contract Sum).
E. Document each substitution request with complete data substantiating compliance of the proposed substitution with the Bidding Documents. Each request shall identify the specified product for which the substitution is requested, and shall clearly describe the product for which approval is requested. The burden shall be on the requester to demonstrate the proposed substitute product’s suitability for use in the Work and its equivalency or superiority in function, appearance, quality, and performance with the product named in the Bidding Documents.
F. A description of any changes to the Bidding Documents that the proposed substitution will require shall be included with the request. The requester shall affirm that dimensions shown on the Drawings will not be affected by the substitute product, and that it will have no adverse effect on other trades, the construction schedule, or specified warranty requirements. The request for use of a substitute product shall be signed by an authorized representative of the firm submitting the request, who shall state that the firm will pay for any changes to the building design, including Design Professional’s design, detailing, and construction cost caused by the requested substitution if the substitution is approved for use in the Work.
G. All such substitute products approved for use in the Work during the established period of time before receipt of Bids will be identified in a subsequent Addendum to the Bidding Documents.

3.02 REQUEST FOR SUBSTITUTION FORM

A. A Request for Substitution Form is attached following this page.
B. Substitution requests shall be emailed to the Issuing Officer at the email address provided in Instructions to Bidders Section 1.04.

END OF SECTION

SUBSTITUTION REQUEST FORM

Project: _____ Substitution Request Number: _____

_____ From: _____

To: _____ Date: _____

_____ A/E Project Number: _____

Re: _____

Specification Title: _____ Description: _____

Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____

Manufacturer: _____ Address: _____ Phone: _____

Trade Name: _____ Model No.: _____

_____ _____ _____

History: ☐ New product ☐ 2-5 years old ☐ 5-10 yrs old ☐ More than 10 years old

Differences between proposed substitution and specified product: _____

_____

_____

☐ Point-by-point comparative data prepared by contractor and 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 _____

_____

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

SUBSTITUTION REQUEST FORM

(Continued)

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.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- 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.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

_____

Telephone: _____

Attachments: _____

_____

_____

_____

A/E's REVIEW AND ACTION

☐ Substitution approved - Make submittals in accordance with Specification Section 01 3300.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01 3300.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: Date:

Additional Comments: ☐ Contractor ☐ Subcontractor ☐ Supplier ☐ Manufacturer ☐ A/E ☐ _____

_____

_____

_____

_____

SECTION 01 2600

CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Change procedures

1.02 CHANGE PROCEDURES

A. The Design Professional will advise of minor changes in the work not involving an adjustment to Contract Sum/Price or contract time as authorized.
B. The Construction Manager may issue a Proposal Request that includes a detailed description of a proposed change with supplementary or revised drawings and specifications and a change in contract time for executing the change as provided by the Design Professional. The Trade Contractor will prepare and submit an estimate within 7 calendar days. Estimates shall be provided for the project at no cost, regardless of acceptance or rejection of proposal.
C. The Trade Contractor may propose changes by submitting a Request for Information to the Construction Manager, describing the proposed change and its full effect on the work. Include a statement describing the reason for the change, and the effect on the Contract Sum/Price 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 the specifications. Construction Manager will forward the Request for Information on to the Design Professional for their official response.
D. Stipulated Sum/Price Change Order: Based on executed Change Order and contractor's fixed price quotation.
E. Unit Price Change Order: The change order will be executed on a fixed unit price basis for pre-determined unit prices and quantities. Changes in contract price or contract time will be computed as specified for time and material change orders.
F. Time and Material Change Order: The change order will be executed on a not to exceed basis. Design professional and Construction Manager will determine the not to exceed estimated cost based on contractor’s proposal for hourly rates and material costs. Maintain detailed records of work done on time and material basis. Time and Material tickets must be submitted daily to the Construction Manager for verification. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the work. Submit itemized account and supporting data after completion of change. A final deductive change order will be issued to reconcile final cost to the initial change order.
G. Change Order Forms: CONSENSUSDOC Forms provided by Owner.
H. Execution of Change Orders: The Construction Manager will issue change orders for signature of parties as provided in the Conditions of the Contract.
I. With respect to pricing change orders, the percentage mark-up for overhead and profit is subject to the following limits:
    1. Fifteen (15) percent maximum for work directly performed by employees of the Constructor, Subcontractor or Sub-subcontractor.
    2. Five (5) percent maximum for work performed or passed through by a Subcontractor and passed through to the Owner by the Constructor.
    3. Five (5) percent maximum Subcontractor’s mark-up for Work performed by a Sub-Subcontractor and passed through to the Owner by the Subcontractor and Constructor.
    4. The maximum allowable mark-up shall be twenty-five (25) percent passed through to the Owner by the Constructor under any circumstances. Overhead and profit shall be shown separately for the Constructor and each Subcontractor of any tier performing the Change Order Work.

J. Contractor and subcontractor agree to provide and require all suppliers to provide, a detailed breakdown of labor, labor burden, materials, installation, rental, and fuel costs.

K. **Please refer to Article 8 of CONSENSUDOCS 802- STANDARD FORM OR AGREEMENT BETWEEN OWNER AND TRADE CONTRACTOR for additional Change Procedures.**

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

SECTION 01 2900

PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Schedule of values
B. Application for payment

1.02 SCHEDULE OF VALUES

A. Coordination: Trade Contactor will coordinate preparation of the Schedule of Values with preparation of the Construction Manager's Construction Schedule.
   1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including Application for Payment forms with Continuation Sheets, Submittals Schedule, and Construction Manager's Construction Schedule.
   2. Submit original Schedule of Values in Procore within 14 days after date of Owner-Trade Contractor Agreement. Schedule of Values must be approved by Owner prior to submission for first application for payment.
B. Format: Utilize the Table of Contents of this project manual. Identify each line item with number and title of the major specification section. Each major specification section should be further itemized by materials cost, labor cost and subcontractor cost for each building separately for the base bid and all accepted alternates. Identify site mobilization, bonds and insurance.
   1. Identification: Include the following Project identification on the Schedule of Values:
      a. Project name and location.
      b. Name and address of Owner, Trade Contractor, Construction Manager and Design Team.
      c. DAS Project Number.
      d. Date of Submittal.
   2. Revise the Schedule of Values to list approved Change Orders with each Application for Payment.

1.03 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications for payments as certified by the Design Professional and paid for by Owner.
   1. Application for Payment at time of Substantial Completion and final Application for Payment involve additional requirements.
B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement. Progress payments shall be submitted to the Construction Manager. Any request for payment for work completed prior to June 30th of any year needs to be submitted by July 15th of the same calendar year.
C. Payment Application Forms: Use AIA form G702 and G703 as the form for the Application for Payment or an equivalent approved by the owner.
D. Include lien waiver forms required by the owner when applicable.
E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of the Trade Contractor. Construction Manager will return incomplete applications without action.
   1. Include amounts of Change Orders issued before last day of construction period covered by application.

F. Waivers of Mechanic's Lien: If requested by Owner with each Application for Payment, submit waivers of mechanic's lien from every entity who is lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment when applicable.
   1. Owner reserves the right to designate which entities involved in the Work must submit waivers.
   2. Submit waivers of lien on forms, executed in a manner acceptable to Owner.

G. Initial Application for Payment: Administrative actions and submittals that must precede submittal of first Application for Payment include the following:
   1. Schedule of Values
   2. Certificates of insurance and insurance policies.
   3. Lists of vendors and any subcontractors.

H. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for the portion of the Work claimed as substantially complete.
   1. Include documentation supporting the claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
   2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

I. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
   1. Evidence of completion of Project closeout requirements.
   2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
   3. Updated final statement, accounting for final changes to the Contract Sum.
   4. AIA Document G706, “Contractor's Affidavit of Payment of Debts and Claims.”
   5. AIA Document G706A, “Contractor's Affidavit of Release of Liens.”
   6. AIA Document G707, “Consent of Surety to Final Payment.”
   7. Letter of Notification to all sub-contractors and suppliers of application for release of retainage.
   8. Evidence that claims have been settled.

J. Payments will be made to the extent of the value of the work performed in the previous month less a retainage amount of 5% of the value of the work performed. Upon substantial completion for the entire work, a sum sufficient to decrease the total retained to 5% of the contract sum, plus such other retainage as the engineer shall determine for all incomplete work and unsettled claims will be authorized.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

SECTION 01 3100

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Coordination
B. Pre-construction meeting
C. Progress meetings
D. Coordination Meetings
E. Requests for Interpretation (RFIs)
F. Background Checks

1.02 COORDINATION

A. 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.
   1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
   2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
   3. Make adequate provisions to accommodate items scheduled for later installation.

B. Administrative procedures: The Trade Contractor will coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
   1. Preparation of Trade Contractor's Construction Schedule.
   2. Provide updated information for Construction Manager's Construction Schedule.
   3. Preparation of Schedule of Values.
   4. Delivery and processing of submittals.
   5. Progress meetings.
   6. Pre-installation conferences.
   7. Project closeout activities

C. Verify utility requirements and characteristics of 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.

D. Coordinate space requirements, supports, and installation of mechanical and electrical work, which are indicated diagrammatically on drawings. Follow routing shown 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.

E. In finished areas except as otherwise indicated conceal pipes and wiring within the construction. Coordinate locations of piping with finish elements.

F. Coordinate completion and cleanup of work of separate sections in preparation for Substantial Completion.

G. 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.

H. During construction coordinate use of site and facilities through Construction Manager.

I. Comply with Construction Manager and Owner’s procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.

J. Make the following types of submittal to Architect through the Construction Manager via Procore:
   1. Request for Information/Interpretation.
   2. Request 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

3.01 PRE-CONSTRUCTION MEETING

A. The Construction Manager and Owner will schedule a meeting after Notice of Award.
B. Required: Design Professional, Owner, Construction Manager, Trade Contractor and any Sub Contractors.
C. Agenda:
   1. Execution of Owner-Contractor Agreement.
   2. Submission of executed bonds and insurance certificates.
   3. Distribution of Contract Documents.
   4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
   5. Designation of personnel representing the parties in Contract.
   6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, change orders, RFIs and contract closeout procedures
   7. Tentative construction schedule.
   8. Critical work sequencing and long-lead items.
   9. Procedures for testing and inspecting.
   10. Preparation of Record Documents.
   11. Safety Procedures.
   12. Owner's requirements.
   13. Security and housekeeping procedures.
   14. Background Checks.
   15. Responsibility for temporary facilities and controls.
   16. Construction waste management.
   17. Logistics (use of premise, parking, work restrictions, maintain egress, etc.)
D. The Construction Manager is to record minutes and distribute copies within two days after meeting to participants, with one copy to owner, participants, and those affected by decisions made.

3.02 PROGRESS MEETINGS

A. The Construction Manager shall schedule and administer meetings throughout progress of the work at **bi-weekly** intervals.
B. The Construction Manager is to make arrangements for meetings, prepare an agenda with copies for participants, and preside at meetings, record minutes and distribute copies within two days to those affected by decisions made.

C. Attendees may include: Project superintendent, major subcontractors and suppliers, Owner, Construction Manager, Architect/Engineer, as appropriate to agenda topics for each meeting. All participants at the conference call shall be familiar with the Project and authorized to conclude matters relating to the Work.

D. Agenda:
   1. Review minutes of previous meetings.
   2. Review the Construction Manager's Construction Schedule.
   3. Field observations, problems, and decisions.
   4. Identification of problems that impede planned progress.
   5. Review of submittals schedule and status of submittals.
   6. Review of RFI's.
   7. Review of off-site fabrication and delivery schedules.
   8. Corrective measures to regain projected schedules.
   9. Planned progress during succeeding work period.
   10. Coordination of projected progress.
   11. Maintenance of quality and work standards.
   12. Effect of proposed changes on progress schedule and coordination.
   13. Other business relating to work.
   14. Access, temporary facilities and controls, housekeeping and progress cleaning.
   15. Safety.
   16. Status of proposal requests, pending changes, official Change Orders.

E. Minutes:
   1. Following the meeting, the meeting minutes will be published in Procore by the Construction Manager for all parties.

3.03 COORDINATION MEETINGS

A. Coordination meetings will be held at the discretion of the construction manager.

3.04 REQUESTS FOR INTERPRETATION (RFIs)

A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, prepare and submit an RFI in Procore.
   1. RFIs shall originate with Trade Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
   2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in the Work.

B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:
   1. Specification Section number and title and related paragraphs, as appropriate.
   2. Drawing number and detail references, as appropriate.
   3. Field dimensions and conditions, as appropriate.
   4. Trade Contractor's suggested solution(s). If Trade Contractor's solution(s) impact the Contract Time or the Contract Sum, Trade Contractor shall state impact in the RFI.
   5. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.

C. Design Professional's Action: Design Professional will review each RFI, determine action required, and return it. Allow seven (7) working days for Design Professional's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day. The following RFIs will be returned without action:
   1. Requests for approval of submittals.
   2. Requests for approval of substitutions.
   3. Requests for coordination information already indicated in the Contract Documents.
   4. Requests for adjustments in the Contract Time or the Contract Sum.
   5. Requests for interpretation of Design Professional's actions on submittals.

6. Incomplete RFIs or RFIs with numerous errors.
7. Design Professional's action may include a request for additional information, in which case Design Professional's time for response will start again.

D. Design Professional's action on RFIs that may result in a change to the Contract Time or the Contract Sum/Price.
1. If Trade Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Construction Manager in writing within ten (10) days of receipt of the RFI response.

E. On receipt of Design Professional's response in Procore, review the response and notify Design Professional within seven (7) days if Trade Contractor disagrees with response.

3.05 BACKGROUND CHECKS

A. Background checks must be performed on all on site employees, including sub-contractors.
B. The Contractor hereby explicitly authorized the Iowa DAS to conduct criminal history and/or other background investigation(s) of the Contractor, its officers, supervisory personnel, employees, and other staff retained by the Contractor or their sub-contractors for the performance of the contract.
C. A state of Iowa record check request form will be provided at the pre-construction meeting. Information required may include:
1. Last Name
2. First Name
3. Middle Name
4. Date of Birth
5. State Driver’s License or State ID #
6. Social Security #

3.06 PREA (PRISON RAPE ELIMIMATION ACT) AND FACILITY ORIENTATION

A. Required for all on-site employees, including sub-contractors.
B. All contractor personnel shall be required to take an online PREA training course (Approximately 30 minutes) and facility orientation (Approximately One Hour) on site prior to access to the facility.
C. PREA link: https://docs.google.com/presentation/d/1_8IcvvpMCYdqasseVuOxzY2ISqjS3RUi6Oups7t6-zA/pub?start=false&loop=false&delayms=3000&slide=id.p

END OF SECTION

SECTION 01 3100.01

WEB BASED CONSTRUCTION MANAGEMENT

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Owner and Contractor shall utilize **Procore Technologies, Inc. Procore** system for electronic submittal of all data and documents (unless specified otherwise by the owner's representative) throughout the duration of the Contract. **Procore** is a web-based electronic media site that is hosted by **Procore Technologies, Inc.**, utilizing their **Procore** web solution. **Procore** will be made available to all contractors' project personnel, subcontractor personnel, suppliers, consultants and the Designer of Record. The joint use of this system is to facilitate; electronic exchange of information, automation of key processes, and overall management of the contract. **Procore** shall be the primary means of project information submission and management. When required by the Owners representative, paper documents will also be provided. In the event of discrepancy between the electronic version and paper documents, the paper documents will govern. **Procore** is a registered trademark of **Procore Technologies, Inc.**

1.02 USER ACCESS LIMITATIONS

A. The Owner's Representative/Construction Manager will control the Contractor's access to **Procore** by allowing access and assigning user profiles to accepted Contractor personnel. User profiles will define levels of access into the system, determine assigned function-based authorizations (determines what can be seen) and user privileges (determines what they can do). Sub-contractors and suppliers will be given access to **Procore** through the Contractor. Entry of information exchanged and transferred between the Contractor and its sub-contractors and suppliers on **Procore** shall be the responsibility of the Contractor.
   1. Joint Ownership of Data: Data entered in a collaborative mode (entered with the intent to share as determined by permissions and workflows within the **Procore** system) by the Owner's Representative and the Contractor will be jointly owned.

1.03 AUTOMATED SYSTEM NOTIFICATION AND AUDIT LOG TRACKING

A. Review comments made (or lack thereof) by the Owner on Contractor submitted documentation shall not relieve the Contractor from compliance with requirements of the Contract Documents. The Contractor is responsible for managing, tracking, and documenting the Work to comply with the requirements of the Contract Documents. Owner's acceptance via automated system notifications or audit logs extends only to the face value of the submitted documentation and does not constitute validation of the Contractor's submitted information.

1.04 SUBMITTALS

A. See Section 01 3300 SUBMITTAL PROCEDURES:
B. Preconstruction Submittals
   1. List of Contractor's key **Procore** personnel. Include descriptions of key personnel's roles and responsibilities for this project. Contractor should also identify their organization's administrator on the list.

1.05 COMPUTER REQUIREMENTS

A. The Contractor shall use computer hardware and software that meets the requirements of the **Procore** system as recommended by **Procore Technologies, Inc.** to access and utilize **Procore**. As recommendations are modified by **Procore**, the Contractor will upgrade their system(s) to meet the recommendations or better. Upgrading of the Contractor's computer systems will not be justification for a cost or time modification to the Contract. The contractor will ensure that connectivity to the **Procore** system (whether at the home office or job site) is accomplished through DSL, cable, T-1 or wireless communications systems. The minimum bandwidth requirement for using the system is 128kb/s. It is recommended a faster connection be used when uploading pictures and files into the system. **Procore** supports the current and prior two major versions of Chrome, Firefox, Internet Explorer, and Safari.

B. The Contractor shall be responsible for the validity of their information placed in **Procore** and for the abilities of their personnel. Accepted users shall be knowledgeable in the use of computers, including Internet Browsers, email programs, cad drawing applications, and Adobe Portable Document Format (PDF) document distribution program. The Contractor shall utilize the existing forms in **Procore** to the maximum extent possible. If a form does not exist in **Procore** the Contractor must include a form of their own or provided by the Owner representative as an attachment to a submittal. Adobe PDF documents will be created through electronic conversion rather than optically scanned whenever possible. The Contractor is responsible for the training of their personnel in the use of **Procore** (outside what is provided by the owner) and the other programs indicated above as needed.

C. User Access Administration: Provide a list of Contractor's key **Procore** personnel for the Owner's Representative acceptance. Contractor is responsible for adding and removing users from the system. The Owners Representative reserves the right to perform a security check on all potential users. The Contractor will be allowed to add additional personnel and sub-contractors to **Procore.**

1.06 CONNECTIVITY PROBLEMS

A. **Procore** is a web-based environment and therefore subject to the inherent speed and connectivity problems of the Internet. The Contractor is responsible for its own connectivity to the Internet. **Procore** response time is dependent on the Contractor's equipment, including processor speed, Internet access speed, etc. and current traffic on the Internet. The Owner will not be liable for any delays associated from the usage of **Procore** including, but not limited to: slow response time, down time periods, connectivity problems, or loss of information. The contractor will ensure that connectivity to the **Procore** system (whether at the home office or job site) is accomplished through DSL, cable, T-1 or wireless communications systems. The minimum bandwidth requirement for using the system is 128kb/s. It is recommended a faster connection be used when uploading pictures and files into the system. Under no circumstances shall the usage of the **Procore** be grounds for a time extension or cost adjustment to the contract.

1.07 TRAINING

A. The Construction Manager shall provide the necessary training to the Prime Contractor.

PART 2 - PRODUCTS

2.01 DESCRIPTION

A. **Procore** project management application (no equal) Provided by Procore Technologies, Inc.

www.**Procore**.com

PART 3 - EXECUTION

3.01 PROCORE UTILIZATION

A. **Procore** shall be utilized in connection with submittal preparation and information management required by Sections:
1. PROJECT MANAGEMENT AND COORDINATION
2. CONSTRUCTION PROGRESS DOCUMENTATION
3. SUBMITTAL PROCEDURES
4. QUALITY REQUIREMENTS
5. Other Division One sections.
6. Requirements of this section are in addition to requirements of all other sections of the specifications.

B. Design Document Submittals
1. All design drawings and specifications shall be submitted as cad .dwg files or PDF attachments to the **Procore** submittal work flow process and form.

C. Shop Drawings
1. Shop drawing and design data documents shall be submitted as cad .dwg files or PDF attachments to the **Procore** submittal work flow process and form. Examples of shop drawings include, but are not limited to:
2. Standard manufacturer installation drawings.
3. Drawings prepared to illustrate portions of the work designed or developed by the Contractor.
4. Steel fabrication, piece, and erection drawings.

D. Product Data
1. Product catalog data and manufacturer’s instructions shall be submitted as
2. PDF attachments to the **Procore** submittal work flow process and form. Examples of product data include, but are not limited to:
3. Manufacturer's printed literature.
4. Preprinted product specification data and installation instructions.

E. Samples
1. Sample submittals shall be physically submitted as specified in Section 01 3300 SUBMITTAL PROCEDURES. Contractor shall enter submittal data information into **Procore** with a copy of the submittal form(s) attached to the sample. Examples of samples include, but are not limited to:
2. Product finishes and color selection samples.
3. Product finishes and color verification samples.
4. Finish/color boards.
5. Physical samples of materials.

F. Administrative Submittals
1. All correspondence and pre-construction submittals shall be submitted using **Procore**. Examples of administrative submittals include, but are not limited to:
2. Digging permits and notices for excavation.
3. List of product substitutions
4. List of contact personnel.
5. Notices for roadway interruption, work outside regular hours, and utility cut overs.

6. Requests for Information (RFI).
7. Construction progress Schedules and associated reports and updates.
    a. Each schedule submittal specified in CONSTRUCTION PROGRESS DOCUMENTATION shall be submitted as a native backed-up file (.PRX or .STX) of the scheduling program being used. The schedule will also be posted as a PDF file in the format.
8. Plans for safety, demolition, environmental protection, and similar activities.
9. Quality Control Plan(s), Testing Plan and Log, Quality Control Reports, Production Reports, Quality Control Specialist Reports, Preparatory Phase Checklist, Initial Phase Checklist, Field Test reports, Summary reports, Rework Items List, etc.
10. Meeting minutes for quality control meetings, progress meetings, pre-installation meetings, etc.
11. Any general correspondence submitted.

G. Compliance Submittals
1. Test reports, certificates, and manufacture field report submittals shall be submitted on **Procore** as PDF attachments. Examples of compliance submittals include, but are not limited to:
    a. Field test reports.
    b. Quality Control certifications.
    c. Manufacturer's documentation and certifications for quality of products and materials provided.

H. Record and Closeout Submittals
1. Operation and maintenance data and closeout submittals shall be submitted on **Procore** as PDF documents during the approval and review stage as specified, with actual set of documents submitted for final. Examples of record submittals include, but are not limited to:
    a. Operation and Maintenance Manuals: Final documents shall be submitted as specified.
    b. As-built Drawings: Final documents shall be submitted as specified.
    c. Extra Materials, Spare Stock, etc.: Submittal forms shall indicate when actual materials are submitted.

I. Financial Submittals
1. Schedule of Value, Pay Applications and Change Request Proposals shall be submitted on **Procore.** Supporting material for Pay Applications and Change Requests shall be submitted on **Procore** as PDF attachments. Examples of compliance submittals include, but are not limited to:
    a. Contractors Schedule of Values
    b. Contractors Monthly Progress Payment Requests
    c. Contract Change proposals requested by the project owner

END OF SECTION

SECTION 01 3200

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Construction Progress Schedule
B. Construction Manager's Construction Schedule
C. Submittal Schedule
D. Daily Construction Reports
E. Progress Photographs

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 CONSTRUCTION MANAGER'S MASTER CONSTRUCTION SCHEDULE

A. Upon award of package, Contractor agrees to accept and meet or improve upon the schedule proposed in section **00 3113 PRELIMINARY SCHEDULE** with intermediate handoffs. Each package contractor will be required to participate in schedule coordination meetings with the Construction Manager.
B. If the bid package contractor does not meet the handoff milestones in the master construction schedule, the bid package contractor shall take measures to increase work forces, increase work hours, initiate revisions to means and methods of construction, and/or other similar measures as required to make up lost time and complete the work in accordance with the construction schedule and remain consistent with project progress and overall construction schedule. Such measures shall be at no additional cost to the Owner. The Construction Manager shall have sole discretion on decisions to accelerate work.
C. Updating the master construction schedule – Contractors are required to attend and participate in schedule coordination update meetings with the Construction Manager. This will be an opportunity for contractors to further define their scheduled scope of work in conjunction with other trades on site.
D. Acceptance of revised master construction schedule – After an updated master construction schedule has been issued via Procore, Contractors will have 48 hours to dispute the new schedule. All contractors will be held to the last fully accepted master construction schedule.

3.02 CONSTRUCTION PROGRESS SCHEDULE

A. Submit preliminary outline to the Construction Manager no later than 48 hours prior to the pre-construction meeting for coordination with Owner's requirements.
B. Submit revised progress schedule with each application for payment.
C. Schedules will be electronically submitted through Procore.
D. Distribute copies of reviewed schedules to project site file, subcontractors, suppliers, and other concerned parties.
E. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.
F. Submit computer generated horizontal bar chart with separate line for each major portion of work

or operation, identifying the first day of each week.

G. Show complete sequence of construction activity, identifying work of separate stages and other logically grouped activities. Indicate early and late start, early and late finish, float dates, and duration.

H. Indicate estimated percentage of completion for each item of work at each submission.

I. Participate in joint review and evaluation of schedule with Construction Manager.

J. Revisions to schedules:

1. Indicate progress of each activity to date of submittal and projected completion date of each activity.
2. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
3. Prepare narrative report to define problem areas, anticipate delays, and impact on schedule. Report corrective action taken, or proposed, and its effect including effect of changes on schedules of separate contractors.

3.03 SUBMITTAL SCHEDULE

A. Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, re-submittal, ordering, manufacturing, fabrications, and delivery when establishing dates.

1. Coordinate submittal schedule with list of subcontractors, the schedule of values, and construction schedule.
2. Submit concurrently with first complete submittal of contractor’s construction schedule.

3.04 DAILY CONSTRUCTION REPORTS

A. Daily Construction Reports: Submitted at weekly intervals.

1. Daily Construction Reports will be submitted to Construction Manager.

B. Prepare a daily construction report recording the following information concerning events at project site:

1. Count of personnel at Project site
2. Equipment at Project site
3. Material Deliveries
4. High and low temperatures and general weather conditions, including presence of rain or snow
5. Accidents
6. Meetings and significant decisions
7. Unusual events
8. Stoppages, delays, shortages, and losses
9. Meter readings and similar recordings
10. Emergency procedures
11. Orders and requests of authorities having jurisdiction
12. Change orders received and implemented
13. Services connected and disconnected
14. Equipment or system tests and startups
15. Partial completions and occupancies
16. Substantial completions authorized

3.05 PROGRESS PHOTOGRAPHS

A. Progress photographs will be electronically submitted through Procore.

B. Preconstruction Photographs: Before starting construction, take photographs of project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Construction manager.

1. Take additional photographs as required to record existing damage to site, structure, equipment, or finishes.

C. Periodic Construction Photographs: Take photographs at regular intervals. Select vantage points to show status of construction and progress since last photographs were taken.

D. Field Completion Construction Photographs: Take photographs after date of Substantial Completion for submission as project record documents. Construction manager will inform of desired vantage points.

END OF SECTION

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SECTION 01 3300

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Submittals for Review
B. Submittals for Information
C. Submittal Procedures
D. Samples

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 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 Construction Manager to forward to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
C. Samples will be reviewed only for aesthetic, color, or finish selection.
D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record document purposes.

3.02 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for information:
   1. Design data.
   2. Certificates.
   3. Test reports.
   4. Inspection reports.
   5. Manufacturer’s instructions.
   6. Manufacturer’s field reports.
   7. Other types indicated.
B. Submit for Construction Manager, Architect, and Owner’s knowledge. No action will be taken.

3.03 SUBMITTAL PROCEDURES

A. Submittals will be electronically submitted through Procore. Contractor will be invited to join web based program after issue of Notice of Intent to award.
B. Shop Drawing Procedures:
   1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting the

Contract Documents and coordinating related Work.

2. Do not reproduce the Contract Documents to create shop drawings.
3. Generic, non-project specific information submitted as shop drawings do not meet the requirements for shop drawings.

C. Transmit each submittal with a copy of approved submittal form.

D. Sequentially number the submittal form. Revise submittals with original number and a sequential numeric suffix.

E. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.

F. 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.

G. Schedule submittals to expedite the project and coordinate submission of related items.

H. For each submittal review, allow 15 days excluding delivery time to and from the contractor.

I. Identify variations from the Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.

J. When revised for resubmission, identify all changes made since previous submission.

K. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.

L. Submittals not requested will not be recognized or processed.

3.04 SAMPLES

A. Submit to Construction Manager to forward to Architect/Engineer for review for limited purpose for checking conformance with information given and design concept expressed in the Contract Documents.

B. Samples for selection as specified in product sections:

1. Submit to Construction Manager to forward to Architect/Engineer for aesthetic, color, or finish selections.
2. Submit samples of finishes from full range of manufacturer's standard colors, textures, and patterns to Construction Manager to forward to Architect/Engineer for selection.

C. Submit samples to illustrate functional and aesthetic characteristics of products, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

D. Include identification on each sample, with full project information.

E. Submit number of samples specified in individual specification sections.

F. Photograph of submitted samples, along with transmittal sheet, shall be uploaded as a submittal in Procore.

END OF SECTION

SECTION 01 4000

QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. References
B. Quality assurance and control of installation
C. Tolerances
D. Defect Assessment
E. Inspection and testing laboratory services
F. Manufacturer's field services and reports

1.02 REFERENCES

A. Conform to reference standard in effect at date of contract.
B. When required by contract documents, obtain copies of standards.
C. Should specified reference standards conflict with contract documents request clarification from engineer before proceeding.
D. The contractual relationship of the parties to the contract shall not be altered from the contract documents by mention or inference otherwise in any reference document.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 QUALITY ASSURANCE/CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship to produce work of specified quality.
B. Comply fully with manufacturer's instructions, including each step in sequence.
C. Should manufacturer's instructions conflict with contract documents, request clarification from the engineer prior to proceeding.
D. Comply with specified standards as a minimum quality for the work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
E. Perform work by persons qualified to produce workmanship of 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 stress, vibration, physical distortion, or disfiguration.

3.02 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.

3.03 DEFECT ASSESSMENT

A. Replace work or portions of work not conforming to specified requirements.

B. If, in the option of the Owner, it is not practical to remove and replace the work, Architect will direct an appropriate remedy or recommend adjusted payment.

3.04 INSPECTION AND TESTING

A. Owner shall include and pay for all required special inspections and testing required by IBC Section 1705, if applicable. This does not include inspections and testing required by other specification sections in this Project Manual. Copies of all testing and inspection reports shall be submitted to the Construction Manager and Design Professional by the testing and inspection agency.

B. Testing Agency Duties:
   1. Provide qualified personnel at site. Cooperate with Architect, Construction Manager, 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. Immediately notify the Construction Manager and contractor of observed irregularities or non-conformance of work or products.
   5. Perform additional testing and inspections required by the Owner

C. Limits on Testing Agency/Inspection Agency Authority:
   1. Agency may not release, revoke, alter, or enlarge on requirement of contract documents.
   2. Agency may not approve or accept any portion of the work.
   3. Agency may not assume any duties of the 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 manufacturer’s 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 test/inspections.
      d. To provide storage and curing of test samples.
   4. Notify Construction Manager and laboratory 24 hours prior to expected time for operations requiring testing/inspection.

E. Re-testing required because of non-conformance to specified requirements shall be performed by the same testing agency on instruction by Architect/Construction Manager.

F. Re-testing required because of non-conformance to specified requirements shall be paid for by the Contractor.

3.05 MANUFACTURER'S FIELD SERVICES AND REPORTS

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 of equipment as applicable and to initiate instructions when necessary.

B. Individuals are to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to the manufacturers' written instructions.

C. Submit report in duplicate within 30 days of observation to Construction Manager for review.

END OF SECTION

SECTION 01 4500
SPECIAL INSPECTIONS AND TESTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes minimum 2015 International Building Code (IBC) required inspections and frequency of inspections.
B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
4. Specific test and inspection requirements are not specified in this Section.

1.03 CONFLICTING REQUIREMENTS

A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

1.04 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
11. Name and signature of laboratory inspector.
12. Recommendations on retesting and reinspecting.

1.05 SPECIAL INSPECTIONS AND TESTS

A. Special Tests and Inspections: Owner will engage a qualified testing agency or special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, as indicated in Statement of Special Inspections included in this Section, and as follows:

B. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.

2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.

C. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
3. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
4. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

D. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

E. Testing Agency Responsibilities: Cooperate with Owner, Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Owner, Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform any duties of Contractor.

F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Preliminary design mix proposed for use for material mixes that require control by testing agency.
6. Security and protection for samples and for testing and inspecting equipment at Project site.

G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

H. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses.

1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION

3.01 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections.
B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log.

3.02 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
B. Protect construction exposed by or for inspection activities.

PART 4 - STATEMENT OF SPECIAL INSPECTIONS

4.01 Definitions:

A. Frequency of special inspections and tests:

1. P (Perform): Perform these tasks for each welded joint, bolted connection, or each member. (AISC 360 & AISC 341)
2. O (Observe): Observe these items on a random basis. Operations need not be delayed pending these inspections. (AISC 360 & AISC 341)
3. P (Perform): Perform these tasks prior to final acceptance for each item or element. (SDI QA/QC)
4. O (Observe): Inspect these items of an intermittent basis. Operations need not be delayed pending these inspection. (SDI QA/QC)
5. D (Document): The inspector shall prepare reports indicating that the work has been performed in accordance with the contract documents. Only required for structures designed per AISC 341 – Seismic Provisions for Structural Steel Buildings. (AISC 341)

6. C (Continuous): Continuous special inspections is the constant monitoring of specific tasks by a special inspector. These inspections must be carried out continuously over the duration of the particular tasks. (2015 IBC)
7. P (Periodic): Periodic special inspection is inspections by the special inspector who is intermittently present where the work has been or is being performed. (2015 IBC)

4.02 Statement of Special Inspections and Test

Statement of Special Inspections and Test
2015 International Building Code
Project: Clarinda Correctional Facility – Kitchen & Laundry Addition

A. Steel Construction (IBC: 1705.2)				
	1. Structural Steel (IBC: 1705.2.1; AISC 360; AISC 341)			
Required	Task	Perform	Observe	Referenced Standard
	Inspection Tasks Prior to Welding			
☒	a. Material identification (Type/Grade).	-	O	AISC 360 - Table N5.4-1, AISC 341 - Table J6-1
☒	b. Fit-up of groove welds (including joint geometry).	-	O	AISC 360 - Table N5.4-1, AISC 341 - Table J6-1
☒	c. Fit-up of fillet welds.	-	O	AISC 360 - Table N5.4-1, AISC 341 - Table J6-1
	Inspection Tasks After Welding			
☒	d. Welds cleaned.	-	O	AISC 360 - Table N5.4-3, AISC 341 - Table J6-3
☒	e. Size, length and location of welds.	P	-	AISC 360 - Table N5.4-3, AISC 341 - Table J6-3
☒	f. Welds meet visual acceptance criteria.	P, D	-	AISC 360 - Table N5.4-3, AISC 341 - Table J6-3
☒	g. Repair activities.	P, D	-	AISC 360 - Table N5.4-3, AISC 341 - Table J6-3
☒	h. Document acceptance or rejection of welded joint or member.	P	-	AISC 360 - Table N5.4-3
	Nondestructive Testing of Welded Joints			
☒	i. CJP welds (Risk Category III or IV).	-	O	AISC 360 - N5.5b
☒	j. Fasteners marked in accordance with ASTM requirements.	-	O	AISC 360 - Table N5.6-1
☒	k. Proper fasteners selected for the joint detail.	-	O	AISC 360 - Table N5.6-1, AISC 341 - Table J7-1
☒	l. Proper bolting procedure selected for joint detail.	-	O	AISC 360 - Table N5.6-1, AISC 341 - Table J7-1
☒	m. Connecting elements, including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements.	-	O	AISC 360 - Table N5.6-1, AISC 341 - Table J7-1

☒	n. Proper storage provided for bolts, nuts, washers and other fastener components.	-	O	AISC 360 - Table N5.6-1, AISC 341 - Table J7-1
	Inspection Tasks During Bolting			
☒	o. Fastener assemblies, of suitable condition, placed in all holes and washers (if required) are positioned as required.	-	O	AISC 360 - Table N5.6-2, AISC 341 - Table J7-2
☒	p. Joint brought to the snug-tight condition prior to the pretensioning operation.	-	O	AISC 360 - Table N5.6-2, AISC 341 - Table J7-2
☒	q. Fastener component not turned by the wrench prevented from rotating.	-	O	AISC 360 - Table N5.6-2, AISC 341 - Table J7-2
☒	r. Fasteners are pretensioned in accordance with the RCSC Specification, progressing systematically from the most rigid point toward the free edges.	-	O	AISC 360 - Table N5.6-2, AISC 341 - Table J7-2
	Inspection Tasks After Bolting			
☒	s. Document acceptance or rejection of bolted connections.	P, D	-	AISC 360 - Table N5.6-3, AISC 341 - Table J7-3
	Other Inspection Task			
☒	t. Anchor rod and other embedments supporting structural steel.	P	-	AISC 360 - N5.7
	2. Cold-Formed Steel Deck (IBC: 1705.2.2, SDI QA/QC)			
Required	Verification and Inspection	Perform	Observe	Referenced Standard
	Inspection or Execution Tasks Prior to Deck Placement (SDI QA/QC Table 1.1)			
☒	a. Verify compliance of materials (deck and all deck accessories) with construction documents, including profiles, material properties, and base metal thickness.	P	-	
☒	b. Document acceptance or rejection of deck and deck accessories.	P	-	
	Inspection or Execution Tasks After Deck Placement (SDI QA/QC Table 1.2)			
☒	c. Verify compliance of deck and all deck accessories installation with construction documents.	P	-	
☒	d. Document acceptance or rejection of installation of deck and deck accessories.	P	-	
	Inspection or Execution Tasks After Welding (SDI QA/QC Table 1.5)			

☒	e. Verify size and location of welds, including support, sidelap, and perimeter welds.	P	-	
☒	f. Welds meet visual acceptance criteria.	P	-	
☒	g. Verify repair activities.	P	-	
☒	h. Document acceptance or rejection of welds.	P	-	
	Inspection or Execution Tasks Prior to Mechanical Fastening (SDI QA/QC Table 1.6)			
☒	h. Proper tools available for fastener installation.	-	O	
☒	j. Proper storage for mechanical fasteners.	-	O	
	Inspection or Execution Tasks During to Mechanical Fastening (SDI QA/QC Table 1.7)			
☒	k. Fasteners are positioned as required.	-	O	
☒	l. Fasteners are installed in accordance with manufacturer's instructions.	-	O	
	Inspection or Execution Tasks After Mechanical Fastening (SDI QA/QC Table 1.8)			
☒	m. Check spacing, type, and installation of support fasteners.	P	-	
☒	n. Check spacing, type and installation of sidelap fasteners.	P	-	
☒	o. Check spacing, type, and installation of perimeter fasteners.	P	-	
☒	p. Verify repair activities.	P	-	
☒	q. Document acceptance or rejection of mechanical fasteners.	P	-	
	3. Open-Web Steel Joist and Joist Girders (IBC: 1705.2.3, IBC Table 1705.2.3)			
Required	Verification and Inspection	Continuous	Periodic	Referenced Standard
	Installation of Open-Web Steel Joists and Joist Girders			
☒	a. End connections - welding or bolted.	-	P	SJI (CJ, K, LH/DLH, JG) Specification
☒	b. Bridging (horizontal or diagonal) - Standard bridging.	-	P	SJI (CJ, K, LH/DLH, JG) Specification

B. Concrete Construction (IBC: 1705.3)					
	1. Concrete Construction (IBC: Table 1705.3)				
Required	Verification and Inspection	Continuous	Periodic	Referenced Standard	IBC Reference
☒	a. Inspection of reinforcing steel, and placement.	-	P	ACI 318: Ch. 20, 25.2, 25.3, 26.5.1-26.5.3	1908.4
☒	b. Inspect anchors cast in concrete.	-	P	ACI 318: 17.8.2	

☒	c. Inspect anchors post-installed in hardened concrete members: Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads.	C	-	ACI 318: 17.8.2.4	
☒	d. Inspect anchors post-installed in hardened concrete members: Mechanical anchors and adhesive anchors not defined in B.1.f	-	P	ACI 318: 17.8.2	
☒	e. Verify use of required design mix.	-	P	ACI 318: Ch. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
☒	f. Fresh concrete tests: refer to section 03 30 00 for tests.	C	-	ASTM C172, ASTM C31, ACI 318: 26.4.5, 26.12	1908.1
☒	g. Inspect concrete placement for proper application techniques.	C	-	ACI 318: 26.4.5	1908.6, 1908.7, 1908.8
☒	h. Verify maintenance of specified curing temperature and techniques.	-	P	ACI 318: 26.4.7-26.4.9	1908.9
☒	i. Inspect erection of precast concrete members.	-	P	ACI 318: Ch. 26.8	
☒	j. Inspect formwork for shape, location and dimensions of the concrete member being formed.	-	P	ACI 318: 26.10.1 (b)	

C. Masonry Construction (IBC: 1705.4)				
	1. Masonry Construction: Level B (TMS 402/ACI 530/ASCE 5: Table 3.1.2)			
Required	Verification and Inspection	Continuous	Periodic	Referenced for Criteria
	Minimum Tests			
☒	a. Verification of f'm and f'ACC.	-	-	TMS 602/ ACI 530.1/ASCE 6: Art.1.4 B
	Prior to Construction			
☒	b. Verify compliance with the approved submittals.	-	P	TMS 602/ ACI 530.1/ASCE 6: Art.1.5
	As Construction Begins			
☒	c. Proportions of site-prepared mortar.	-	P	TMS 602/ ACI 530.1/ASCE 6: Art. 2.1, 2.6 A
☒	d. Construction of mortar joints.	-	P	TMS 602/ ACI 530.1/ASCE 6: Art. 3.3 B
☒	e. Location of reinforcement, connectors, .	-	P	TMS 602/ ACI 530.1/ASCE 6: Art. 3.4, 3.6 A
	Prior to Grouting			
☒	f. Grout space.	-	P	TMS 602/ ACI 530.1/ASCE 6: Art. 3.2 D, 3.2 F

☒	g. Grade, type, and size of reinforcement and anchor bolts,.	-	P	TMS 402/ ACI 530/ASCE 5: Sec. 6.1 TMS 602/ ACI 530.1/ASCE 6: Art. 2.4, 3.4
☒	h. Placement of reinforcement, connectors,.	-	P	TMS 402/ ACI 530/ASCE 5: Sec. 6.1, 6.2.1, 6.2.6, 6.2.7 TMS 602/ ACI 530.1/ASCE 6: Art. 3.2 E, 3.4, 3.6 A
☒	i. Proportions of site-prepared.	-	P	TMS 602/ ACI 530.1/ASCE 6: Art. 2.6 B, 2.4 G.1.b
☒	j. Construction of mortar joints.	-	P	TMS 602/ ACI 530.1/ASCE 6: Art. 3.3 B
	During Construction			
☒	k. Size and location of structural elements.	-	P	TMS 602/ ACI 530.1/ASCE 6: Art. 3.3 F
☒	l. Type, size, and location of anchors, including other details of anchorage of masonry to structural members, frames, or other construction.	-	P	TMS 402/ ACI 530/ASCE 5: Sec. 1.2.1 €, 6.1.4.3, 6.2.1
☒	m. Preparation, construction, and protection of masonry during cold weather (temperature below 40°F (4.4°C)) or hot weather (temperature above 90°F (32.2°C)).	-	P	TMS 602/ ACI 530.1/ASCE 6: Art. 1.8 C, 1.8 D
☒	n. Placement of grout is in compliance.	C	-	TMS 602/ ACI 530.1/ASCE 6: Art. 3.5, 3.6 C
☒	o. Observe preparation of grout specimens, mortar specimens, and/or prisms.	-	P	TMS 602/ ACI 530.1/ASCE 6: Art. 1.4 B.2.a.3, 1.4 B.2.b.3, 1.4 B.2.c.3, 1.4 B.3, 1.4 B.4

E. Soils (IBC: 1705.6)				
	1. Soils (IBC: Table 1705.6)			
Required	Verification and Inspection	Continuous	Periodic	Referenced Standard
☒	a. Verify materials below shallow foundation are adequate to achieve the design bearing capacity.	-	P	
☒	b. Verify excavations are extended to proper depth and have reached proper material.	-	P	
☒	c. Perform classification and testing of compacted fill materials.	-	P	
☒	d. Verify use of proper materials, densities and lift thicknesses during placement	C	-	

	and compaction of compacted fill.			
☒	e. Prior to placement of compacted fill, observe subgrade and verify that site has been prepared properly.	-	P	

K. Fire-Resistance and Smoke Control					
Required	Verification and Inspection	Continuous	Periodic	Referenced Standard	IBC Reference
	1. Sprayed Fire-Resistant Materials (IBC: 1705.14)				
☒	a. Condition of substrates.	-	P		1705.14.2
☒	b. Application.	-	P		1705.14.3
☒	c. Thickness.	-	P		1705.14.4
☒	d. Density.	-	P		1705.14.5
☒	e. Bond strength adhesion/cohesion.	-	P		1705.14.6
	2. Fire-Resistant Penetrations and Joints (IBC: 1705.17)				
☒	a. Penetration firestops.	-	P	ASTM E 2174	1705.17.1
☒	b. Fire-resistant joint systems.	-	P	ASTM E 2393	1705.17.2

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SECTION 01 5000

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Temporary Utilities
B. Temporary Sanitary Facilities
C. Telephone Service
D. Removal of Utilities, Facilities, and Controls
E. Temporary Facilities
F. Equipment
G. Vehicular Access and Parking
H. Traffic Regulation
I. Barriers
J. Enclosures and Fencing
K. Waste Removal

1.02 TEMPORARY UTILITIES

A. Owner will provide the following:
   1. Electrical Power Supply, consisting of connection to existing facilities.
   2. Water Supply, consisting of connection to existing facilities.
B. The Contractor shall pay for installation, maintenance, and removal of temporary utilities. Temporary utilities shall not disrupt the Facility's need for continuous service.

1.03 TEMPORARY SANITARY FACILITIES

A. Temporary Sanitary Facilities shall be by owner.

1.04 TELEPHONE SERVICE

A. Provide, maintain, and pay for telephone service to field or use a cellular telephone.

1.05 REMOVAL OF UTILITIES, FACILITIES AND CONTROLS

A. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 - PRODUCTS

2.01 TEMPORARY FACILITIES

A. Field Offices: Coordinate with Construction Manager and Owner if applicable.

2.02 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated, with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.01 VEHICULAR ACCESS AND PARKING

A. Use designated existing on-site roads for construction traffic.
B. Parking is as directed by Owner.
C. When site space is not adequate, provide additional off-site parking.
D. Use of designated existing on-site streets and driveways used for construction traffic is permitted. Track vehicles not allowed on paved areas.
E. Use of designated areas of existing parking facilities used by construction personnel as permitted.
F. Do not allow heavy vehicles or construction equipment in parking areas.
G. Provide and maintain access to fire hydrants, free of obstructions.
H. Provide means of removing mud from vehicle wheels before entering streets.

3.02 TRAFFIC REGULATION

A. Flag Persons: Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.
B. Flares and lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.
C. Haul Routes:
    1. Consult with authority having jurisdiction, establish public thoroughfares to be used for haul routes and site access.
D. Removal:
    1. Remove equipment and devices when no longer required.
    2. Repair damage caused by demolition.

3.03 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 during construction operations.
B. Provide barricades and covered walkways required by governing authorities for public rights-of-way.
C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

3.04 ENCLOSURES AND FENCING

A. Provide temporary enclosures and fences as necessary to protect the public and secure the site.
B. Provide security and facilities to protect work, existing facilities, and Owner’s operations from unauthorized entry, vandalism, or theft.

3.05 WASTE REMOVAL

A. Except for items or materials to be salvaged, recycled or otherwise reused, remove waste materials from project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
    1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
    2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
B. Burning: Do not burn waste materials.

C. Waste Disposal Facilities: Provide waste collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction.
D. All Trade Contractors shall be responsible for the cleanup of their own work. Provide means and methods to ensure construction debris and materials are collected and removed to dumpsters on a daily basis.
E. Each Trade Contractor shall provide daily jobsite clean-up for debris and dust generated by the installation of their scope of work. Haul debris to the dumpster provided by the Construction Manager. Daily jobsite clean-up shall consist of all prime contractor's employees cleaning the work area for at least 30 minutes before leaving.
F. Roll Off Service (Dumpsters) shall be provided by the owner.

END OF SECTION

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SECTION 01 6000

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. General product requirements
B. Product options
C. Maintenance materials
D. Transportation and handling
E. Storage and protections

PART 2 - PRODUCTS

2.01 GENERAL PRODUCT REQUIREMENTS

A. Provide new products unless specifically required or permitted by the contract documents.
B. Do not use products having any of the following characteristics:
   1. Made using or containing CFC's or HCFC's
   2. Made of wood from newly cut old growth timber.
C. Where all other criteria are met, contractor shall give preference to products that:
   1. If used on interior, have lower emissions
   2. If wet-applied, have lower VOC content
   3. Are extracted, harvested, and/or manufactured closer to the location of the project
   4. Have longer documented life span under normal used
   5. Result in less construction waste
   6. Are made of vegetable materials that are rapidly renewable

2.02 PRODUCT OPTIONS

1. Products specified by reference standards or by description only: Use of any product meeting those standards or description.
2. 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.
3. Products specified by naming one or more manufacturers with a provision for substitutions: Submit a request for substitution for any manufacturer not named by the date specified in this project manual.

2.03 MAINTENANCE MATERIALS

1. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
2. Deliver to project site; obtain receipt prior to final payment.

PART 3 - EXECUTION

3.01 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.

3.02 STORAGE AND PROTECTIONS

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 weather tight, climate controlled, enclosures in an environment favorable to the product.
E. For exterior storage of fabricated products, place on slopped 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 manufacturers' warranty conditions, if any.
H. Cover product subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
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 7300

EXECUTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures
B. Alteration project procedures
C. Cutting and patching
D. Cleaning and protection
E. Adjusting

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 EXAMINATION, PREPARATION, AND GENERAL INSTALLATION PROCEDURES

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 mis-production.
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; include 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.
G. Clean substrate surfaces prior to applying next material or substance.
H. Seal cracks or openings of substrate prior to applying next material or substance.
I. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.
J. 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.
K. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
L. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
M. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
N. Make neat transitions between different surfaces, maintaining texture and appearance.

3.02 ALTERATION PROJECT PROCEDURES

A. Materials: As specified in product sections match existing products and work for patching and extending work.
B. Employ skilled and experienced installer to perform alteration work.
C. Close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity.

D. Remove unsuitable material not marked for salvage, including rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished work.
E. Remove, cut and patch work in a manner to minimize damage and to provide a means of restoring products and finished to original condition.
F. Remove debris and abandoned items from area and from concealed spaces.
G. Refinish visible existing surfaces to remain in renovated rooms and spaces to specified condition for each material with a neat transition to adjacent finishes.
H. Where new work abuts or aligns with existing, perform a smooth and even transition. Patched work to match existing adjacent work in texture and appearance.
I. When finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line of division and make recommendation to the Construction Manager. Prior to cutting get the Owner's approval.
J. Where change of plane of ¼ inch or more occurs, submit recommendation for providing smooth transition to the Construction Manager for review.

3.03 CUTTING AND PATCHING

A. Employ skilled and experienced installer to perform cutting and patching.
B. Submit written request in advance of cutting or altering elements which affect:
   1. Structural integrity of element.
   2. Integrity of weather-exposed or moisture-resistant elements.
   3. Efficiency, maintenance, or safety of element.
   4. Visual qualities of sight exposed elements.
   5. Work of owner or separate contractor.
C. Execute cutting, fitting, and patching to complete work, and to:
   1. Fit the several parts together, to integrate with other work.
   2. Uncover work to install or correct ill-timed work.
   3. Remove and replace defective and non-conforming work.
   4. Remove samples of installed work for testing.
   5. Provide openings in elements of work for penetrations of mechanical and electrical work.
D. Execute work by methods to avoid damage to other work and which will provide proper surfaces to receive patching and finishing.
E. Cut rigid materials using masonry saw or core drill.
F. Cut masonry and concrete materials using masonry saw or core drill.
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. Maintain integrity of wall, ceiling or floor construction; completely seal voids.
J. Refinish surfaces to match adjacent finishes. Refinish to nearest intersection for continuous surfaces. Refinish entire unit for continuous surfaces for an assembly.
K. Identify hazardous substances or conditions exposed during the work to the engineer for decision or remedy.

3.04 CLEANING AND PROTECTION

A. Progress cleaning
   1. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
   2. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.
B. Protection of installed work
   1. Protect installed work from damage by construction operations.
   2. Provide special protection where specified in individual specification sections.

3. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
4. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.
5. Prohibit traffic from landscaped areas.

3.05 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

END OF SECTION

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SECTION 01 7700

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Inspections
B. Substantial Completion
C. Project Record Documents
D. Warranties
E. Operations and Maintenance Manuals
F. Operations and Maintenance Data for Materials and Finishes
G. Operations and Maintenance Data for Equipment and Systems
H. Training
I. Final Completion
J. Maintenance

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 INSPECTIONS

A. Ensure all state inspections have been completed by the authority having jurisdiction.
B. Upload documentation of all test/inspections to Procore.
C. Submit a written request for inspection of Substantial Completion. On receipt of request, The Design Professional will either proceed with inspection or notify contractor of unfulfilled requirements. The Design Professional will prepare the Certificate of Substantial Completion after inspection or will notify contractor of items, either on contractor's list or additional items identified by architect that must be completed or corrected before certificate will be issued.
    1. Re-inspection: Request re inspection when the work identified in previous inspections as incomplete is completed or corrected.
    2. Results of completed inspection will form the basis of requirements for Final Completion.

3.02 SUBSTANTIAL COMPLETION

A. A substantial completion checklist is attached for reference following this specification section.
B. Make submittals that are required by governing or other authorities.
    1. Provide copies to the Construction Manager through upload to Procore.
C. Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
    1. Submit written certification that contract documents have been reviewed, work has be inspected, and that work is completed in accordance with contract documents and ready for review
    2. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the work has not been completed.
    3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
    4. Make final changeover of permanent locks and deliver key to the owner. Advise owner's personnel of changeover in security provisions.
    5. Complete startup testing of systems.

6. Submit test/adjust, balance records.
7. Terminate and remove temporary facilities from project site, along with mockups, construction tools, and similar elements.
8. Advise owner of changeover in heat and other utilities.
9. Submit changeover information related to owner's occupancy, use, operation, and maintenance.
10. Complete final cleaning requirements, including touch up painting.
11. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

3.03 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the work:
   1. Drawings
   2. Specifications
   3. Addenda
   4. Change orders and other modifications to the contract
   5. Reviewed shop drawings, product data, and samples
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, not less than weekly.
E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
   1. Manufacturer’s name and product model and number.
   2. Product substitutions or alterations utilized.
   3. Changes made by Addenda and modifications.
F. Record Drawings:
   1. Measured depths of foundations in relation to finish first floor datum.
   2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
   3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the work.
   4. Field changes of dimension and detail.
   5. Details not on original contract drawings.
G. Record Drawings shall be uploaded to Procore in pdf format.

3.04 WARRANTIES

A. Submit written warranties for designated portions of the work where commencement of warranties other than date of Substantial Completion is indicated.
B. Submit properly executed warranties in Procore prior to Final Completion.
C. Verify that documents are in proper form, contain full information, and are notarized.
D. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
E. Include warranties in operation and maintenance manuals.
F. Items of work delayed beyond date of Substantial Completion, provide updated submittal after acceptance by Owner, listing date of acceptance as start of warranty period

3.05 OPERATIONS AND MAINTENANCE MANUALS

A. Format: Submit operations and maintenance manuals in the following format:

1. Portable Document Format (PDF) electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Owner and upload to Procore.
    a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
2. Assemble with data arranged in the same sequence as, and identified by the specification sections. Where systems involve more than one specification section, provide separate index for each system.
3. Include project directory listing title and address of project, names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.
4. Include Table of Contents listing every item separated by index and specification section.

B. 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.

C. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

D. 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.

E. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.06 OPERATIONS 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. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.

D. Additional information as specified in individual product specification sections.

E. 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 specified products.

3.07 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 replacement 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 specified products.

C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.

D. Include color coded wiring diagrams as installed.

E. 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.
F. Maintenance requirements: Include routine procedure and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
G. Provide servicing and lubrication schedule and list of lubricants required.
H. Include manufacturer's printed operation and maintenance instructions.
I. Include sequence of operation by controls manufacturer.
J. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
K. Provide control diagrams by controls manufacturer as installed.
L. Provide contractor's coordination drawings, with color coded piping diagrams as installed.
M. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
N. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
O. Include test and balancing reports.
P. Additional requirements: As specified in individual specification sections.

3.08 TRAINING

A. Demonstrate operations of systems, subsystems, and equipment.
B. Train in operation and maintenance of systems, subsystems, and equipment
C. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.
D. Submit written agenda to Construction Manager for approval prior to scheduling training.
E. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

3.09 FINAL COMPLETION

A. A final completion checklist is attached for reference following this specification section.
B. Before requesting final inspection for determining date of Final Completion, complete the following:
    1. Complete punch list items.
    2. Prepare and submit project record documents, operation and maintenance manuals, damage or settlement surveys, and similar final record information.
    3. Deliver tools, spare parts, extra materials, and similar items to location designated by owner. Label with manufacturer's name and model number where applicable.
    4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
    5. All trailers, construction signs, unused, broken or demolition materials have been removed from the site and the premises returned to the original condition in the opinion of the Owner and Design Professional.
    6. Submit a final Application for Payment (retainage).
C. Upon receipt of final payment complete final completion certificate in Procore.

END OF SECTION

Substantial Completion Project Checklist

Date: _____

DAS Project Number: _____
Project Title: _____
Location: _____
Contractor: _____

In order to process the 99% payment (100% pay app less closeout and retainage) on a Capital Project, the Department of Administrative Services needs the following information. Please complete this form and obtain the necessary documents.

Have all state inspections been completed and documentation uploaded to Procore?
(Including but not limited to the following inspections)

Boiler Inspection	❑ **Yes**	❑ **No**	❑ **N/A**
Water Heater Inspection	❑ **Yes**	❑ **No**	❑ **N/A**
Energy Code Inspection	❑ **Yes**	❑ **No**	❑ **N/A**
Building Code Inspection	❑ **Yes**	❑ **No**	❑ **N/A**
Electrical Inspection	❑ **Yes**	❑ **No**	❑ **N/A**
Elevator Inspection	❑ **Yes**	❑ **No**	❑ **N/A**
Other: _____	❑ **Yes**	❑ **No**	❑ **N/A**

❑ **Occupancy Permit if applicable**

❑ **Test and Balance has been performed**

❑ **Certificate of Substantial Completion in Procore (Consensus Docs 814)**

Are there any disputes with the above mentioned vendor which need resolution?
❑ **Yes (provide description below)** ❑ **No**

_____

_____

Can payment (less closeout and retainage) be released? ❑ **Yes** ❑ **No**

Final Completion Project Checklist

Date: _____

DAS Project Number: _____
Project Title: _____
Location: _____
Contractor: _____

In order to process the 100% payment and Retainage payment on a Capital Project, the Department of Administrative Services needs the following information. Please complete this form and obtain the necessary documents.

Have all Warranties been received? ❑ Yes ❑ No

Have the Operations and Maintenance Manuals been received? ❑ Yes ❑ No

Who is in possession of the O & M Manuals? _____

Has all training been completed? ❑ Yes ❑ No

Have all as-built drawings been scanned and uploaded into Procore? ❑ Yes ❑ No

Have electronic drawing/specification files been transferred to DAS? ❑ Yes ❑ No

Have all Test & Balance reports been received? ❑ Yes ❑ No

Have all punchlist items been corrected? ❑ Yes ❑ No

❑ **573 Notification** *(To be obtained from the general contractor):* Copy of general contractor's notification of application for retainage to all subcontractors and suppliers. General contractor must follow IAC 26 section 23.13.2.

❑ **AIA Form G706 – Contractor's Affidavit of Payment of Debts and Claims**

❑ **AIA Form G706A – Contractor's Affidavit of Release of Liens**

❑ **AIA Form G707 – Consent of Surety Company to Final Payment**

❑ **Certificate of Final Completion in Procore (Consensus Docs 815)**

Are there any disputes with the above mentioned vendor which need resolution?
❑ Yes (provide description below) ❑ No

_____

_____

Can 100% payment and retainage payment be released? ❑ Yes ❑ No

SECTION 01 9113
GENERAL COMMISSIONING REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Commissioning is a systematic process of verifying and documenting that all building systems and assemblies are installed, checked out and perform interactively according to the Contract Documents and Owner's objectives and requirements. This is achieved during construction, and the warranty or occupancy period with actual verification of performance. The commissioning process shall encompass and coordinate the functions of system documentation, equipment installation, equipment startup, control calibration, testing and balancing, functional testing and training.

B. The trade contractors and subcontractors are ultimately responsible for the commissioning responsibilities for their trades. If the trade contractors elects to outsource commissioning responsibilities, the Owner must approve the agent.

C. Commissioning will be directed by a commissioning provider (CxP) that has been contracted directly to the Owner. Any CxP responsibilities are listed in the specifications as information to the trade contractors.

D. Commissioning Team: The members of the commissioning team consist of the CxP, the Owner, the Contractor(s), the Architect and design engineers, the mechanical contractor, the electrical contractor, the testing adjusting and balancing representative, the contractors of automated controls, any other installing subcontractors or suppliers of commissioned equipment or assemblies and the Owner's building or plant operator/Engineer.

E. The Commissioning Provider does not have authority or authorization to direct any changes or modifications to work. The Commissioning Provider may provide comments and recommendations. Decisions on changes to the contract documents lie with the architect and engineer of record, and the Owner.

F. This Section includes a description of the commissioning process to be used for this Project and applies to all commissioned systems and assemblies.

G. Commissioning Process Overview: The following narrative provides a brief overview of the typical commissioning tasks during construction and the general order in which they occur.

1. Commissioning during construction begins with a kick-off meeting conducted by the CxP where the commissioning process is reviewed with the commissioning team members.
2. Additional meetings will be required throughout construction, scheduled by the CxP with necessary parties attending. These will be held in conjunction with regular construction meetings when possible.
3. Equipment and assembly documentation is submitted to the CxP concurrent with the Owner or design team review period, including product submittals, detailed start-up procedures and installation manuals.
4. The CxP and/or Contractor(s) develop construction checklists to be completed by the Contractor during the installation and start-up process.
5. The Contractor, under their own direction, execute and document the Startup Documentation Packages and perform start-up and initial checkout. The CxP documents that the checklists and start-up were completed through spot witnessing and reviewing Contractor's completed checklists and startup reports.
6. The CxP performs periodic construction observation.
7. The CxP and Contractor(s) develops specific written equipment and system functional test procedures for all commissioned equipment.
8. The functional test procedures are executed by the Contractor(s), under the direction of the CxP.
9. Items of non-compliance in material, installation or setup are corrected by the Contractor(s) and the system is re-tested.
10. The CxP reviews the O&M manuals for clarity and completeness.

11. The CxP reviews the training program provided by the trade contractors and verifies that it is completed.
12. Functional testing is complete before Substantial Completion.
13. Opposite season or deferred testing and near-warranty-end activities are conducted, as specified.

H. Abbreviations: The following are common abbreviations used in the Specifications and in the commissioning process.

A/E	Architect and Design Engineers
BAS	Building Automation System
BOD	Basis of Design
CC	Controls Contractor (building automation system)
CM	Construction Manager
Cx	Commissioning
CxP	Commissioning Provider
CxC	Commissioning Coordinator
EC	Electrical Contractor
FT	Functional Test
IST	Integrated System Test
MC	Mechanical Contractor
O&M	Operation and Maintenance Manuals
OPR	Owner's Project Requirements
PC	Plumbing Contractor
PFC	Prefunctional Checklists
PM	Project Manager (of the Owner)
SOO	Sequence of Operations
Subs	Subcontractors / Trade Contractors
TAB	Test and Balance (Contractor)

1.02 SYSTEMS TO BE COMMISSIONED

A. HVAC:
1. Air Handling Units
2. Dedicated Outside Air Units
3. Exhaust Fans
4. Split System Heating / Cooling Units
5. Terminal Heating Equipment
6. Variable Air Volume Boxes

B. Building Automation System:
1. Graphics
2. Sequences of Operation

C. Electrical Systems:
1. Generator and Transfer Switches
2. Lighting Controls

D. Plumbing Systems:
1. Circulating Pumps
2. Water Heaters

1.03 RELATED REQUIREMENTS

A. Section 017800 - Closeout Submittals: Scope and procedures for operation and maintenance manuals and project record documents.

B. Section 017900 - Demonstration and Training: Scope and procedures for Owner personnel training.

C. Section 230800 – HVAC Commissioning Requirements.

D. Section 260800 – Electrical Commissioning Requirements.

1.04 REFERENCE STANDARDS

A. ASHRAE Guideline 0-2013 – The Commissioning Process.

B. ASHRAE Standard 202-2018 - Commissioning Process for Buildings and Systems.

1.05 RESPONSIBILITIES BY PARTY

A. Architect and Mechanical and Electrical Engineers of Record (for contractor reference):
   1. Develop the Basis of Design and design narratives (if not already complete).
   2. At the request of either the Owner's Representative or CxP review selected functional test procedures and submit comments to the Owner's Representative.
   3. Attend commissioning kickoff meeting at start of construction phase and commissioning meetings as necessary.
   4. Assist in resolution of design related issues that are discovered during commissioning.
   5. Respond to commissioning requests for information and clarify design intent.

B. Commissioning Provider (general overview for contractor reference):
   1. Coordinates the planning and execution of the commissioning process. Prepares a Commissioning Plan.
   2. Responsible for directing and documenting testing as delineated in this and other specification sections.
   3. Maintain the commissioning Issues Log.
   4. Lead commissioning kickoff meeting at start of construction phase and commissioning meetings as necessary.
   5. Prepare functional test procedures for each commissioned system.
   6. Review Contractor's submittals related to commissioned systems.
   7. Provide input for commissioning activities into the Contractor's schedule.
   8. Prepare and submit Observation Reports and the Issues Log as required.
   9. Verify that the Owner's maintenance personnel receive specified training.
   10. Prepare a Commissioning Report that includes a summary of overall commissioning process, including deficiencies found, deficiency corrections, unresolved deficiencies, approved equipment and systems, discrepancies between final design intent and as-built systems, completed commissioning checklists, test documentation, and other commissioning documentation.
   11. Perform a review of the building operation within 10 months after substantial completion.

C. Owner (for contractor reference):
   1. Ensure the Contractor performs their commissioning responsibilities.
   2. Facilitate the coordination of the commissioning work by the CxP and resolution of design issues.
   3. Approve the commissioning work.

D. Trade Contractor(s):
   1. The details of this article apply, as appropriate, to the trade contractor(s) and sub-tier contractors providing commissioned equipment.
   2. Coordinate and direct system installers in executing their commissioning tasks.
   3. Coordinate with the CxP to ensure that commissioning activities are integrated into the master schedule.
   4. Attend the commissioning planning and kick-off meetings and other necessary meetings scheduled by the CxP to facilitate the commissioning process.
   5. Oversee and document the execution of construction checklists and provide documentation of checklist completion and start-up reports to the CxP. Checklists shall be filled out only by parties having direct knowledge of the line item being signed off.
   6. Participate in the automated controls integration meetings coordinated by the CxP.

7. Furnish to the CxP a copy of all construction documents, addenda, requests for information, change orders and initial and approved submittals and shop drawings related to commissioned equipment
8. Provide to the CxP manufacturer installation, start-up, operating, troubleshooting and maintenance procedures.
9. Submit a written plan to the Owner and CxP for any temporary startup of equipment used for space conditioning. Obtain plan approval of Owner and CxP prior to such startup.
10. Notify the Construction Manager and CxP when pipe and duct pressure testing, flushing, cleaning, start-up of each piece of equipment and testing adjusting, and balancing is complete.
11. Be responsible for the resolution of contractor issues and deficiencies that are discovered during commissioning.
12. Develop start-up plan using the manufacturer's installation and start-up procedures combined with the construction checklists from the CxP or Subcontractor for commissioned assemblies and equipment. Submit to CxP for review and approval prior to start-up.
13. Review functional test procedures developed by the CxP to ensure feasibility, safety and equipment protection.
14. Prior to functional testing, review the functional test procedures, run the equipment through the test procedures and confirm the equipment and system is ready for and will pass functional testing with the CxP.
15. As assigned in this or other specification sections, write step-by-step test procedures and documentation forms for commissioned equipment and assemblies. Execute testing for selected systems and assemblies under the direction of the CxP. Assist and cooperate with the CxP by putting all commissioned equipment and systems into operation and continuing the operation during each working day of testing, as required.
16. Provide all tools and equipment or the use of tools to start, checkout and test equipment and systems, except for specified testing with portable data-loggers, which shall be supplied and installed by the CxP. Submit a list of the measuring instrument tools with their accuracy specs and calibration dates to the CxP for approval at least two weeks prior to testing.
17. Provide skilled technicians and perform testing under the direction of the CxP. Skilled technicians shall be familiar with the specific equipment and the specific automated control programming on this project.
18. Coordinate with equipment manufacturers to determine specific requirements to maintain the validity of the warranty during occupancy. Provide this information to the CxP.

E. Equipment Suppliers and Vendors of Commissioned Assemblies and Equipment
1. Provide requested submittal data including startup and checkout instructions. Provide specific responsibilities of the Owner to keep warranties in force for all commissioned equipment or assemblies.
2. Assist the installing contractor in filling in construction checklist, startup and checkout documentation for equipment supplier or vendor installs and/or starts up.
3. Provide information requested by CxP regarding equipment sequence of operation and testing procedures.
4. Submit startup reports to Contractor within two days of startup.
5. Review CxP test procedures for equipment installed by factory representatives.
6. Assist in functional testing of equipment as needed by the Contractor and according to the specifications, including assisting CxP with execution of the functional tests for equipment with packaged controls, including demonstrating all controller setup screens.
7. For larger primary equipment provide the technician that conducted start-up to support the first part of testing by the CxP, including chillers, boilers, large air handlers.
8. Provide expert qualified staff for equipment training.

1.06 SUBMITTALS

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

1. Make all submittals specified in this section, and elsewhere where indicated for commissioning purposes, directly to the Commissioning Provider, unless they require review by Architect; in that case, submit to Architect first.
2. Submit one copy to the Commissioning Provider or provide access to electronic / cloud-based system for submittals.
3. As soon as possible after submittals made to Architect are approved, submit copy of approved submittal to the Commissioning Provider.

B. Product Data: If submittals to Architect do not include the following, submit copies as soon as possible:
1. Manufacturer's product data, cut sheets, and shop drawings.
2. Manufacturer's installation instructions.
3. Startup, operating, and troubleshooting procedures.
4. Fan and pump curves.
5. Factory test reports.
6. Warranty information, including details of Owner's responsibilities in regard to keeping warranties in force.

C. Manufacturers' Instructions: Submit copies of all manufacturer-provided instructions that are shipped with the equipment as soon as the equipment is delivered.

D. Startup Plans and Reports.

E. Commissioning Issues Log:
1. Construction observations.
2. Supporting photographs.

F. Manufacturer's Field Reports: Indicate procedures followed, ambient temperatures, humidity, wind velocity during application, and supplementary instructions given.

PART 2 PRODUCTS

2.01 TEST EQUIPMENT

A. Provide all standard testing equipment required to perform startup and initial checkout and required Functional Testing; unless otherwise noted such testing equipment will NOT become the property of Owner.

B. Calibration Tolerances: Provide testing equipment of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified. If not otherwise noted, the following minimum requirements apply:
1. Temperature Sensors and Digital Thermometers: Certified calibration within past year to accuracy of 0.5 degree F (0.3 degree C) and resolution of plus/minus 0.1 degree F (0.05 degree C).
2. Pressure Sensors: Accuracy of plus/minus 2.0 percent of the value range being measured (not full range of meter), calibrated within the last year.
3. Calibration: According to the manufacturer’s recommended intervals and when dropped or damaged; affix calibration tags or keep certificates readily available for inspection.

C. Equipment-Specific Tools: Where special testing equipment, tools and instruments are specific to a piece of equipment, are only available from the vendor, and are required in order to accomplish startup or Functional Testing, provide such equipment, tools, and instruments as part of the work at no extra cost to Owner; such equipment, tools, and instruments are to become the property of Owner.

D. Dataloggers: Independent equipment and software for monitoring flows, currents, status, pressures, etc. of equipment.
1. Dataloggers required for Functional Tests will be provided by the Commissioning Provider and will not become the property of Owner.

PART 3 EXECUTION

3.01 GENERAL

A. Cloud based software will be utilized for maintaining Prefunctional Checklists, Functional Performance Testing and Issue management. Contractors will be required to utilize the system. Logins will be provided to the contractors, and the software does not require a subscription fee from the contractors.

3.02 COMMISSIONING PLAN

A. Commissioning Provider will prepare the Commissioning Plan.
   1. Attend meetings called by the Commissioning Provider for purposes of completing the commissioning plan.
   2. Require attendance and participation of relevant subcontractors, installers, suppliers, and manufacturer representatives.

B. Contractor is responsible for compliance with the Commissioning Plan.

C. Commissioning Plan: The commissioning schedule, procedures, and coordination requirements for all parties in the commissioning process.

D. Commissioning Schedule:
   1. Submit anticipated dates of startup of each item of equipment and system to Commissioning Provider within 60 days of anticipated start-up.
   2. Re-submit anticipated startup dates monthly, but not less than 4 weeks prior to startup.
   3. Prefunctional Checklists and Functional Tests are to be performed in sequence from components, to subsystems, to systems.
   4. Provide sufficient notice to Commissioning Provider for delivery of relevant Checklists and Functional Test procedures, to avoid delay.

E. Meetings:
   1. Kick-off Meeting: The Contractor and prime subcontractors of commissioned equipment and the contractors of all major control systems (e.g., BAS, lighting), sheet metal and balancing subcontractors will attend a commissioning kick-off meeting planned and conducted by the CxP. Cx process, schedules, roles and communication and documentation protocols are discussed.
   2. Temporary or Early Startup of Equipment. When equipment will be used in a temporary mode prior to operating the equipment permanently, a meeting shall be held that discusses the issues surrounding indoor environmental quality, moisture intrusion, building pressurization, duct and equipment cleanliness, checkout of safeties and fire alarm and protection, maintaining hydronic water quality, etc.
   3. Miscellaneous Meetings: Meetings will be attended by the Contractor and appropriate subcontractors to deal with operation clarifications, deficiencies, schedules and testing. When practical, commissioning meetings will be an appendage to regular construction meetings. The number of specific meetings dedicated to commissioning, besides those specifically listed in this Section are expected to consist of, but may exceed, the following:
      a. Equipment Start-Up Planning
      b. From the beginning of functional testing of mechanical equipment until all mechanical equipment has had the first round of testing conducted: 1-hour meetings once a week.
      c. From the end of the first round of testing until all deficiencies are corrected: 1-hour meetings once a week or as set by the owner.
      d. If the number of deficiencies is abnormal or coordination or cooperation is insufficient, additional meetings or meeting durations shall be required.

3.03 STARTUP PLANS AND REPORTS

A. Startup Plans: For each item of equipment and system for which the manufacturer provides a startup plan, submit the plan not less than 8 weeks prior to startup.

B. Startup Reports: For each item of equipment and system for which the manufacturer provides a startup checklist (or startup plan or field checkout sheet), document compliance by submitting the completed startup checklist prior to startup, signed and dated by responsible entity.

C. Submit directly to the Construction Manager and Commissioning Provider.

3.04 PREFUNCTIONAL CHECKLISTS

A. A Prefunctional Checklist is required to be filled out for each item of equipment or other assembly specified to be commissioned.
   1. Prefunctional Checklists will be prepared by the CxP and filled out by the CxP.
   2. These checklists do not replace manufacturers' recommended startup checklists, regardless of apparent redundancy.
   3. Contractor is responsible for reviewing Prefunctional Checklists, after completion of installation and before startup.
      a. When asked to review the proposed Checklists, do so in a timely manner.
   4. Checklists with incomplete items may be submitted for approval provided the Contractor attests that incomplete items do not preclude the performance of safe and reliable Functional Testing; re-submission of the Checklist is required upon completion of remaining items.
   5. Individual Checklists may contain line items that are the responsibility of more than one installer; Contractor shall assign responsibility to appropriate installers or subcontractors.
   6. Regardless of these reporting requirements, Contractor is responsible for correct startup and operation.
   7. Commissioning Provider may add any relevant items deemed necessary regardless of whether they are explicitly mentioned in Contract Documents or not.

B. Deficiencies:
   1. Correct deficiencies and re-inspect or re-test, as applicable, at no extra cost to Owner.

3.05 FUNCTIONAL TESTING

A. A Functional Test is required for each item of equipment, system, or other assembly specified to be commissioned, unless sampling of multiple identical or near-identical units is allowed by the final test procedures.

B. Contractor is responsible for the execution of required Functional Tests, after completion of Prefunctional Checklist and before closeout.

C. Commissioning Provider is responsible for witnessing and reporting results of Functional Tests, including preparation and completion of forms for that purpose.

D. The Trade Contractor(s) is responsible to ensure that equipment is ready for functional testing with the CxP which means the equipment will pass the measures in the test procedures previously submitted for their review and use. The responsible subcontractors use these written test procedures to checkout their equipment and shall dynamically run (not by simulation) the equipment through the test procedures prior to testing with the CxP, unless exempted elsewhere in the specifications. The installing and automated controls contractors shall sign the test procedure attesting to this successful pre-test execution and final test readiness prior to functional testing with the CxP.

E. Formal functional tests with the CxP for a given system or assembly shall not be conducted until they are fully operational under normal and reliable control with control calibrations, programming, including all alarms, and automated control system graphics complete and trending and archiving set up and checked out and the Trade Subcontractors have submitted a signed completed construction checklist and where applicable a startup report, the air balancing and water balancing is deemed sufficiently complete by the CxP for the applicable systems, all satisfactory to the Commissioning Provider, and the installing contractors of automated controls have signed on the functional test script that they have run through the script dynamically with their equipment and that it will pass the test.

F. If test readiness documentation indicates systems were ready, but the CxP finds upon arriving on site to conduct scheduled tests or during testing, that procedure failures or incomplete systems show that systems were actually not ready for testing, lost time by the CxP to work through the issues or come back for testing will be back charged to the Contractor.

G. Prior to testing with the CxP, trending and archiving must have been set up by the BAS Controls contractor and is active for all points that are relevant for verifying proper operation or for troubleshooting

H. Contractor is responsible for correction of deficiencies and re-testing at no extra cost to Owner; if a deficiency is not corrected and re-tested immediately, the Commissioning Provider will document the deficiency and the Contractor's stated intentions regarding correction.
   1. Deficiencies are any condition in the installation or function of a component, piece of equipment or system that is not in compliance with Contract Documents or does not perform properly.
   2. When the deficiency has been corrected, the Contractor completes the form certifying that the item is ready to be re-tested and returns the form to the Commissioning Provider; the Commissioning Provider will reschedule the test and the Contractor shall re-test.
   3. Identical or Near-Identical Items: If 10 percent, or three, whichever is greater, of identical or near-identical items fail to perform due to material or manufacturing defect, all items will be considered defective; provide a proposal for correction within 2 weeks after notification of defect, including provision for testing sample installations prior to replacement of all items.
   4. Contractor shall bear the cost of Owner and Commissioning Provider personnel time witnessing re-testing.
   5. Contractor shall bear the cost of Owner and Commissioning Provider personnel time witnessing re-testing if the test failed due to failure to execute the relevant Prefunctional Checklist correctly; if the test failed for reasons that would not have been identified in the Prefunctional Checklist process, Contractor shall bear the cost of the second and subsequent re-tests.

I. Functional Test Procedures:
   1. Some test procedures are included in Contract Documents; where Functional Test procedures are not included in Contract Documents, test procedures will be determined by the Commissioning Provider with input by and coordination with Contractor.
   2. Examples of Functional Testing:
      a. Test the dynamic function and operation of equipment and systems (rather than just components) using manual (direct observation) or monitoring methods under full operation (e.g., the chiller pump is tested interactively with the chiller functions to see if the pump ramps up and down to maintain the differential pressure setpoint).
      b. Systems are tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, fire alarm, power failure, etc.
      c. Systems are run through all the HVAC control system’s sequences of operation and components are verified to be responding as the sequence's state.
      d. Systems such as electrical generator testing may require coordination with other parties, such as the electric utility company.
      e. Traditional air or water test and balancing (TAB) is not Functional Testing; spot checking of TAB by demonstration to the Commissioning Provider is Functional Testing.

J. Deferred Functional Tests: Some tests may need to be performed later, after substantial completion, due to partial occupancy, equipment, seasonal requirements, design or other site conditions; performance of these tests remains the Contractor's responsibility regardless of timing.

3.06 SENSOR AND ACTUATOR CALIBRATION

A. Calibrate all field-installed temperature, relative humidity, carbon monoxide, carbon dioxide, and pressure sensors and gauges, and all actuators (dampers and valves) on this piece of equipment shall be calibrated. Sensors installed in the unit at the factory with calibration certification provided need not be field calibrated.

B. Calibrate using the methods described below; alternate methods may be used, if approved by Commissioning Provider and Owner beforehand. See PART 2 for test instrument

requirements. Record methods used on the relevant Prefunctional Checklist or other suitable forms, documenting initial, intermediate and final results.

C. All Sensors:
   1. Verify that sensor location is appropriate and away from potential causes of erratic operation.
   2. Verify that sensors with shielded cable are grounded only at one end.
   3. For sensor pairs that are used to determine a temperature or pressure difference, for temperature make sure they are reading within 0.2 degree F (0.1 degree C) of each other, and for pressure, within tolerance equal to 2 percent of the reading of each other.
   4. Tolerances for critical applications may be tighter.

D. Sensors Without Transmitters - Standard Application:
   1. Make a reading with a calibrated test instrument within 6 inches (150 mm) of the site sensor.
   2. Verify that the sensor reading, via the permanent thermostat, gauge or building automation system, is within the tolerances in the table below of the instrument-measured value.
   3. If not, install offset, calibrate or replace sensor.

E. Sensors With Transmitters - Standard Application.
   1. Disconnect sensor.
   2. Connect a signal generator in place of sensor.
   3. Connect ammeter in series between transmitter and building automation system control panel.
   4. Using manufacturer’s resistance-temperature data, simulate minimum desired temperature.
   5. Adjust transmitter potentiometer zero until 4 mA is read by the ammeter.
   6. Repeat for the maximum temperature matching 20 mA to the potentiometer span or maximum and verify at the building automation system.
   7. Record all values and recalibrate controller as necessary to comply with specified control ramps, reset schedules, proportional relationship, reset relationship and P/I reaction.
   8. Reconnect sensor.
   9. Make a reading with a calibrated test instrument within 6 inches (150 mm) of the site sensor.
   10. Verify that the sensor reading, via the permanent thermostat, gauge or building automation system, is within the tolerances in the table below of the instrument-measured value.
   11. If not, replace sensor and repeat.
   12. For pressure sensors, perform a similar process with a suitable signal generator.

F. Sensor Tolerances for Standard Applications: Plus/minus the following maximums:
   1. Watthour, Voltage, Amperage: 1 percent of design.
   2. Pressure, Air, Water, Gas: 3 percent of design.
   3. Air Temperatures (Outside Air, Space Air, Duct Air): 0.4 degrees F (0.2 degree C).
   4. Relative Humidity: 4 percent of design.
   5. Barometric Pressure: 0.1 inch of Hg (340 Pa).
   6. Flow Rate, Air: 10 percent of design.
   7. Flow Rate, Water: 4 percent of design.
   8. AHU Wet Bulb and Dew Point: 2.0 degrees F (1.1 degrees C).

G. Critical Applications: For some applications more rigorous calibration techniques may be required for selected sensors. Describe any such methods used on an attached sheet.

H. Valve/Damper Stroke Setup and Check:
   1. For all valve/damper actuator positions checked, verify the actual position against the control system readout.
   2. Set pump/fan to normal operating mode.
   3. Command valve/damper closed; visually verify that valve/damper is closed and adjust output zero signal as required.

4. Command valve/damper to open; verify position is fully open and adjust output signal as required.
5. Command valve/damper to a few intermediate positions.
6. If the actual valve/damper position does not reasonably correspond, replace actuator or add pilot positioner (for pneumatics).

I. Isolation Valve or System Valve Leak Check: For valves not associated with coils.
1. With full pressure in the system, command valve closed.
2. Use an ultra-sonic flow meter to detect flow or leakage.

3.07 POINT-TO-POINT CHECKOUT REQUIREMENTS

A. Items described in this section apply to the BAS:

1. These procedures will verify the following for each physical control point:

a. Field device is installed per the manufacturer's recommendations and the project drawings and specifications.

b. Field verify calibration of all analog inputs and outputs.

c. Verify labeling of controllers, field devices, and wiring.

d. Physical points are correctly addressed and communicating properly between its controller and the field device.

B. Detailed written procedures for execution of Point-to-Point Checkouts shall be submitted to the Owner and AE by the Contractor for review and approval prior to the start of testing. Include proposed test forms as part of this submittal.

C. The Contractor shall provide all tools and instrumentation necessary for execution of this testing. All instrumentation must be in calibration and meet the requirements of Part 2 of this specification.

3.08 TEST PROCEDURES - GENERAL

A. Provide skilled technicians to execute starting of equipment and to execute the Functional Tests. Ensure that they are available and present during the agreed upon schedules and for sufficient duration to complete the necessary tests, adjustments and problem-solving.

B. Provide all necessary materials and system modifications required to produce the flows, pressures, temperatures, and conditions necessary to execute the test according to the specified conditions. At completion of the test, return all affected equipment and systems to their pre-test condition.

C. Sampling: Where Functional Testing of fewer than the total number of multiple identical or near-identical items is explicitly permitted, perform sampling as follows:
1. Identical Units: Defined as units with same application and sequence of operation; only minor size or capacity difference.
2. Sampling is not allowed for:
a. Major equipment.
b. Prefunctional Checklist execution.
3. XX = the percent of the group of identical equipment to be included in each sample; defined for specific type of equipment.
4. YY = the percent of the sample that if failed will require another sample to be tested; defined for specific type of equipment.
5. Randomly test at least XX percent of each group of identical equipment, but not less than three units. This constitutes the "first sample."
6. If YY percent of the units in the first sample fail, test another XX percent of the remaining identical units.
7. If YY percent of the units in the second sample fail, test all remaining identical units.

8. If frequent failures occur, resulting in more troubleshooting than testing, the Commissioning Provider may stop the testing and require Contractor to perform and document a checkout of the remaining units prior to continuing testing.

D. Manual Testing: Use hand-held instruments, immediate control system readouts, or direct observation to verify performance (contrasted to analyzing monitored data taken over time to make the “observation”).

E. Simulating Conditions: Artificially create the necessary condition for the purpose of testing the response of a system; for example apply hot air to a space sensor using a hair dryer to see the response in a VAV box.

F. Simulating Signals: Disconnect the sensor and use a signal generator to send an amperage, resistance or pressure to the transducer and control system to simulate the sensor value.

G. Indirect Indicators: Remote indicators of a response or condition, such as a reading from a control system screen reporting a damper to be 100 percent closed, are considered indirect indicators.

H. Indirect Indicators: Remote indicators of a response or condition, such as a reading from a control system screen reporting a damper to be 100 percent closed, are considered indirect indicators.

I. Monitoring: Record parameters (flow, current, status, pressure, etc.) of equipment operation using dataloggers or the trending capabilities of the relevant control systems, where monitoring of specific points is called for in Functional Test Procedures:
   1. All points that are monitored by the relevant control system shall be trended by Contractor; at the Commissioning Provider’s request, Contractor shall trend up to 20 percent more points than specified at no extra charge.
   2. Other points will be monitored by the Commissioning Provider using dataloggers.
   3. At the option of the Commissioning Provider, some control system monitoring may be replaced with datalogger monitoring.
   4. Provide hard copies of monitored data in columnar format with time down left column and at least 5 columns of point values on same page.
   5. Graphical output is desirable and is required for all output if the system can produce it.
   6. Monitoring may be used to augment manual testing.

3.09 ISSUES AND NON-CONFORMANCE

A. Issue Management
   1. The CxP will record the results of document reviews, field observations, tests conducted or reviewed and trend logs or monitoring. All deficiencies or non-conformance issues will be recorded on a master Issues Log managed by the CxP.
   2. Within two days of identification of one or more Issues, the CxP will send a copy of the new issues to the CM and trade contractors. If the party feels they are not responsible or they have questions as to how to address the issue they will respond to the CxP and CM within two days. Otherwise they proceed with the correction.
   3. Upon making needed changes or corrections, the party will, within two days of correction, notify the CM who will immediately notify the CxP of the issue status.
   4. The trade contractors are responsible for troubleshooting identified deficiencies and making corrections in a timely manner.
   5. The trade contractors shall keep the CxP updated as to the status of each issue as requested by the CxP and always within two days before a commissioning progress meeting.
   6. The CxP documents status and resolutions in the Issues Log and schedules retesting and re-inspection as needed.
   7. Corrections of minor issues identified may be made during testing at the discretion of the CxP and with the issue and resolution documented in the Issues Log.
   8. Cost of Retesting:

a. The Contractor may be back-charged for retesting or troubleshooting and for tests not able to be started that were not cancelled at least 24 hours in advance or for tests that were started but could not be substantially completed due to too many deficiencies, failure to have appropriate personnel, test equipment, permits or access available and in place for successful execution of the test. Charges will be determined at the CxP's standard hourly billing rate and include standard travel reimbursable expenses.

B. Approval and Acceptance
   1. The CxP initially interprets satisfactory performance of systems and assembly tests.
   2. When performance of a test is disputed by the Contractor the Owner will have final interpretive authority in consultation with the Designer of Record and CxP.

3.10 SEASONAL TESTING

A. During the Occupancy period, seasonal testing (tests delayed until weather conditions are closer to the system's design) specified in the testing requirements shall be completed as part of this contract. The CxP will coordinate this activity. The Contractor shall execute these tests and correct any deficiencies. The Contractor shall make needed final adjustments to the O&M manuals and Record Documents due to the testing results.

3.11 OPERATION AND MAINTENANCE MANUALS

A. See Section 017800 - Closeout Submittals for additional requirements.

B. Add design intent documentation furnished by Architect to manuals prior to submission to Owner.

C. Submit manuals related to items that were commissioned to Commissioning Provider for review; make changes recommended by Commissioning Provider.

D. Commissioning Provider will add commissioning records to manuals after submission to Owner.

3.12 WRITTEN WORK PRODUCT

A. The commissioning process generates a number of written work products described in various parts of the specifications. The Commissioning Plan lists all the formal written work products, describes briefly their contents, who is responsible to create them, their due dates, who receives and approves them and the location of the specification to create them.

B. Below is a brief summary of written work products:

Product	**Developed by**
Equipment documentation submittals	Trade Contractors / Subs
Sequence clarifications	Trade Contractors and A/E
Pre-functional checklists	CxP
Start-up and initial checkout plan	Trade Contractors and CxP
Pre-functional checklists filled out	Trade Contractors
Start-up and initial checkout forms filled out	Trade Contractors
Final TAB report	TAB
Issues log (deficiencies)	CxP
Functional test forms	CxP and Subs
Filled out functional tests	CxP and Subs
Training plans and records	Trade Contractors
O&M manuals	Trade Contractors
Final Commissioning Report	CxP

END OF SECTION

SECTION 02 4100
DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of built site elements.

B. Selective demolition of building elements for alteration purposes.

C. Abandonment and removal of existing utilities and utility structures.

1.02 RELATED REQUIREMENTS

A. Section 00 3100 - Available Project Information: Existing building survey conducted by Owner; information about known hazardous materials.

B. Section 01 1000 - Summary: Limitations on Contractor's use of site and premises.

C. Section 01 5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.

D. Section 01 5713 - Temporary Erosion and Sediment Control.

E. Section 01 6000 - Product Requirements: Handling and storage of items removed for salvage and relocation.

F. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.

G. Section 07 0150.19 - Preparation for Re-Roofing: Removal of existing roofing, roof insulation, flashing, trim, and accessories.

H. Section 31 2200 - Grading: Fill material for filling holes, pits, and excavations generated as a result of removal operations.

1.03 REFERENCE STANDARDS

A. 29 CFR 1926 - Safety and Health Regulations for Construction; Current Edition.

B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2022, with Errata (2021).

1.04 SUBMITTALS

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

B. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 SCOPE

A. Provide demolition work as indicated on demolition drawings.

B. Demolition work noted in drawings is not exhaustive, remove additional items necessary to complete new work.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Use of explosives is not permitted.
   3. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   4. Provide, erect, and maintain temporary barriers and security devices.

5. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
6. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
7. Do not close or obstruct roadways or sidewalks without permit.
8. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
9. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

B. Do not begin removal until receipt of notification to proceed from Owner.

C. Do not begin removal until built elements to be salvaged or relocated have been removed.

D. Protect existing structures and other elements that are not to be removed.
1. Provide bracing and shoring.
2. Prevent movement or settlement of adjacent structures.
3. Stop work immediately if adjacent structures appear to be in danger.

E. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

F. If hazardous materials are discovered during removal operations, stop work and notify Architect/Engineer and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.

G. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

3.03 EXISTING UTILITIES

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

3.04 SELECTIVE DEMOLITION FOR 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/Engineer before disturbing existing installation.
3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Separate areas in which demolition is being conducted 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.
2. Provide sound retardant partitions of construction indicated on drawings in locations indicated on drawings.

C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

D. Remove existing work as indicated and as required to accomplish new work.
   1. Remove items indicated on drawings.

E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
   2. 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.
   3. See Section 01 1000 for other limitations on outages and required notifications.
   4. Verify that abandoned services serve only abandoned facilities before removal.
   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.

F. 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.
   4. Patch as specified for patching new work.

3.05 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

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SECTION 03 3000
CAST-IN-PLACE CONCRETE

PART 1 - 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 cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.
B. Section includes suppling and installing anchors to be cast into concrete elements.
C. Related Requirements:
   1. Section 01 45 00 “Special Inspections and Tests” for required verifications and inspections.
   2. Section 03 35 70 “Concrete Floor Finishes.”
   3. Section 31 20 00 "Earth Moving for Building" for drainage fill under slabs-on-grade.

1.03 SUBMITTALS

A. Product Data: For each type of product.

B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
   1. Indicate amounts of mixing water to be withheld for later addition at Project site.

C. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement. Provide shop drawing of masonry dowel placement for review.
D. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
   1. Location of construction joints is subject to approval of the Architect.

E. Material Certificates: For each of the following, signed by manufacturers:
   1. Cementitious materials.

F. Material Test Reports: For the following, from a qualified testing agency:
   1. Aggregates.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

1.06 FIELD CONDITIONS

A. 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.

B. 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.

PART 2 - PRODUCTS

2.01 CONCRETE, GENERAL

A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301.
2. ACI 117.

2.02 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

1. Plywood, metal, or other approved panel materials.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Void Forms: Biodegradable paper surface, treated for moisture resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.

D. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.

E. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

F. Form Ties: Factory-fabricated, removable or snap-off glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
2. Furnish ties that, when removed, leave holes no larger than 1 inch in diameter in concrete surface.
3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

2.03 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

B. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, plain, fabricated from as-drawn steel wire into flat sheets.

2.04 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.

B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

1. For concrete surfaces exposed to view, where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.

C. Epoxy Adhesive for Reinforcing Bars: Install per manufacturer’s instructions; bar size and embedment depth as indicated on Drawings.

1. Products:

   a. HIT-HY200 Adhesive Anchoring System manufactured by Hilti, Inc.
   b. PE1000+ Epoxy Injection Adhesive Anchoring System manufactured by Powers Fasteners.
   c. SET-EP Epoxy Adhesive manufactured by Simpson Strong-Tie Company.
   d. Substitutions: As approved by Engineer prior to bid.

2.05 BOLTS, CONNECTORS, AND ANCHORS

A. Headed Anchor Rods: ASTM F 1554, Grade 36, straight.

1. Nuts: ASTM A 563 heavy-hex carbon steel.
2. Plate Washers: ASTM A 36/A 36M carbon steel.
3. Washers: ASTM F 436, Type 1, hardened carbon steel.
4. Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C or Mechanically deposited zinc coating, ASTM B 695, Class 50.

2.06 CONCRETE MATERIALS

A. 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.

B. Cementitious Materials:

1. Portland Cement: ASTM C 150/C 150M, Type I, gray.

2. Fly Ash: ASTM C 618, Class F or C.
3. Slag Cement: ASTM C 989/C 989M, Grade 100 or 120.

C. Normal-Weight Aggregates: ASTM C 33/C 33M, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source.

1. Maximum Coarse-Aggregate Size:

   a. Footings: 1-1/2 inches nominal.
   b. Walls and Slab: 3/4 inch nominal.
   c. Stair Pan or Topping less than 2” thick: 1/2 inch nominal.

2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

D. Air-Entraining Admixture: ASTM C 260/C 260M.

E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

F. Water: ASTM C 94/C 94M.

2.07 VAPOR RETARDERS

A. Underslab Vapor Retarder: Multi-layer, fabric, cord, or aluminum reinforced polyethylene or equivalent, complying with ASTM E1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. The use of single ply polyethylene is prohibited. Include manufacturer's recommended adhesive or pressure-sensitive tape.

1. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations in vapor retarder.
2. Products:
    a. Stego Industries, LLC; Stego Wrap Vapor Barrier 15-mil.
    b. W.R. Meadows, Inc.; PERMINATOR 15 mils.
    c. Substitutions: As approved by Engineer prior to bid.

2.08 LIQUID FLOOR TREATMENTS

A. Refer to Section 03 35 70 "Concrete Floor Finishes."

2.09 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

D. Water: Potable.

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.

F. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

2.10 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: 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:
    a. ASTM D 1751, asphalt-saturated sellulosic fiber.
    b. Closed-cell, non-absorbent, compressible polyethylene or polymer foam.

B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, according to ASTM D 2240.

C. Bonding Agent: ASTM C 1059/C 1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.

2.11 REPAIR MATERIALS

A. Repair Materials: Submit proposed product and installation procedures for the required repair areas. Materials and installation subject to review by the Design Professional.

2.12 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

B. Cementitious Materials: Use fly ash and/or slag cement 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:

1. Fly Ash: 20 percent.
2. Slag Cement: 50 percent.
3. Combined Fly Ash or Pozzolan and Slag Cement: 50 percent portland cement minimum, with fly ash not exceeding 20 percent.

C. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use 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 and concrete with a w/c ratio below 0.50.

2.13 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Footings: Normal-weight concrete.

1. Minimum Compressive Strength: 3000 psi at 28 days.
2. Maximum W/C Ratio: 0.50.
3. Slump Limit: 4 inches, plus or minus 1 inch. Up to 6 inches for concrete with verified slump of 2 to 4 inches before adding water-reducing admixture or plasticizing admixture.
4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery.

B. Foundation Walls: Normal-weight concrete.

1. Minimum Compressive Strength: 4500 psi at 28 days.
2. Maximum W/C Ratio: 0.45.
3. Slump Limit: 4 inches, plus or minus 1 inch. Up to 8 inches for concrete with verified slump of 2 to 4 inches before adding water-reducing admixture or plasticizing admixture.
4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery.

C. Exterior Slabs-on-Grade: Normal-weight concrete.

1. Minimum Compressive Strength: 5000 psi at 28 days.
2. Maximum W/C Ratio: 0.45.
1. Slump Limit: 4 inches, plus or minus 1 inch. Up to 6 inches for concrete with verified slump of 2 to 4 inches before adding water-reducing admixture or plasticizing admixture.
2. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery.

D. Interior Slabs-on-Grade and Topping Slabs: Normal-weight concrete.

1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Maximum W/C Ratio: 0.45.

3. Slump Limit: 4 inches, plus or minus 1 inch. Up to 6 inches for concrete with verified slump of 2 to 4 inches before adding water-reducing admixture or plasticizing admixture.
4. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.

E. Concrete Toppings: Normal-weight concrete.

1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Maximum W/C Ratio: 0.45.
3. Slump Limit: 4 inches, plus or minus 1 inch.
4. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.

2.14 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.15 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, 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.

PART 3 - EXECUTION

3.01 FORMWORK INSTALLATION

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
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 C, 1/2 inch for rough-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.
E. Construct 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. Do not use rust-stained steel form-facing material.

F. 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.
G. 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.
H. Chamfer exterior corners and edges of permanently exposed concrete.
I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.02 EMBEDDED ITEM INSTALLATION

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.

3.03 REMOVING AND REUSING FORMS

A. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material are not acceptable for exposed surfaces. Apply new form-release agent.

B. 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.

3.04 VAPOR-RETARDER INSTALLATION

A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.

1. Lap joints 6 inches and seal with manufacturer's recommended tape.

3.05 STEEL REINFORCEMENT INSTALLATION

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded-wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Lace overlaps with wire.

3.06 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated.

2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.

3. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.

4. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.

5. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-third of concrete thickness as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.

2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants are indicated.
3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

3.07 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.

B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

C. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301. Do not use vibrators to transport concrete inside forms.

D. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
2. Maintain reinforcement in position on chairs during concrete placement.
3. Screed slab surfaces with a straightedge and strike off to correct elevations.
4. Slope surfaces uniformly to drains where required.
5. 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.
6. Concrete slabs on metal deck shall be placed to indicated thickness. Concrete is not to be planed to ‘level’ due to anticipated deflection of steel supporting structure.

3.08 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces not exposed to public view.

B. Smooth-Formed 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. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces exposed to public view.

C. 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.

3.09 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Float Finish: 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 re-straightening until surface is left with a uniform, smooth, granular texture.

1. Apply float finish to surfaces to receive trowel finish.

C. Trowel Finish: 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.

1. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
2. Finish surfaces to the following tolerances, according to ASTM E 1155 (ASTM E 1155M), for a randomly trafficked floor surface:
    a. Typical Floor Slab-on-Grade: Specified overall values of flatness, F(F) 30; and of levelness, F(L) 25; with minimum local values of flatness, F(F) 20; and of levelness, F(L) 15.
    b. Typical Elevated Floor Slab: Specified overall values of flatness, F(F) 25; with minimum local values of flatness, F(F) 17.

D. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.10 MISCELLANEOUS CONCRETE ITEM INSTALLATION

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 and Foundations:

1. Coordinate sizes and locations of concrete bases with actual equipment provided.
2. Construct concrete bases 4 inches high unless otherwise indicated and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated or unless required for seismic anchor support.
3. Minimum Compressive Strength: 4000 psi at 28 days.
4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 24-inch centers around the full perimeter of concrete base.

3.11 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

B. Maintain concrete with minimum moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

1. Normal Concrete: Not less than 7 days.
2. High early strength concrete: Not less than 4 days.

C. Formed Surfaces: Cure formed concrete surfaces and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue moist curing, or apply curing compound, for remainder of curing period.

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Initial Curing: Initial curing refers to the cutting procedures implemented anytime between concrete placement and final finishing of the concrete surface to reduce moisture loss from the surface.

    a. Fogging: Fog spray the concrete surface with the spray directed above, not at, the concrete surface. Do not allow the water to pond on the surface and do not work accumulated water into the surface during the finishing process.
    b. Liquid-applied evaporation reducers: Apply using application rate and method recommended by the manufacturer.

2. Intermediate Curing: Intermediate curing refers to the curing procedures implemented when finishing is completed, but before the concrete has reached final set. During this period, surface evaporation may need to be reduced, but the concrete may not yet be able to tolerate the direct application of water or the mechanical damage resulting from the application of coverings.

    a. Fogging: Fog spray the concrete surface with the spray directed above, not at, the concrete surface.
    b. Liquid-Applied Evaporation Reducers: Apply using application rate recommended by the manufacturer.
    c. Curing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3. Final Curing: Final Curing refers to the curing procedures implemented after final finishing, and after the concrete has reached final set. Apply final curing method before surface is dry.

    a. Moisture-Retaining Sheet: Lap strips not less than 3 inches and seal with waterproof tape or adhesive; secure at edges.
    b. Saturated Burlap: Saturate burlap-polyethylene, and place burlap-side down over floor slab areas, lapping ends and sides; maintain in place.
    c. Ponding: Maintain 100 percent coverage of water over floor slab areas, continuously for four (4) days.

d. Straying: Spray water over floor slab areas, and maintain wet.
e. Curing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.12 LIQUID FLOOR TREATMENT APPLICATION

A. Refer to Section 03 35 70 “Concrete Floor Finishes.”

B. Sealing Coat: Uniformly apply a continuous sealing coat of curing and sealing compound to hardened concrete by power spray or roller according to manufacturer's written instructions.

3.13 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions at exposed slab joint locations.

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 joints 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.

3.14 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Repair materials and installation not specified may be used, subject to Architect's approval.

3.15 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Inspections: Refer to Section 01 45 00 “Special Inspections and Tests” for required verifications and inspections.

C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172/C 172M shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture for the first 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231/C 231M, 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.
4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C 31/C 31M.
    a. Cast and laboratory cure four standard cylinder specimens for each composite sample.
6. Compressive-Strength Tests: ASTM C 39/C 39M; test one specimens at 7 days, two specimens at 28 days, and one specimen retained in reserve for later testing if required.

a. 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.

7. Test results shall be reported in writing to 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.
8. 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.
9. 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 C 42/C 42M or by other methods as directed by Architect.
10. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
11. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

D. Measure floor and slab flatness and levelness according to ASTM E 1155 within 48 hours of finishing.

3.16 PROTECTION OF LIQUID FLOOR TREATMENTS

A. Protect liquid floor treatment from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by liquid floor treatments installer.

END OF SECTION

SECTION 03 3511
CONCRETE FLOOR FINISHES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Liquid densifiers and hardeners.

1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete: Finishing of concrete surface to tolerance; floating, troweling, and similar operations; curing.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with concrete floor placement and concrete floor curing.

1.04 SUBMITTALS

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

B. Product Data: Manufacturer's published data on each finishing product, including information on compatibility of different products and limitations.

C. Maintenance Data: Provide data on maintenance and renewal of applied finishes.

D. Warranty Documentation: Manufacturer warranty; ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 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.

C. Locate where directed.

D. Mock-up may remain as part of the work.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's sealed packaging, including application instructions.

1.07 FIELD CONDITIONS

A. Maintain ambient temperature of 50 degrees F minimum.

1.08 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Correct defective work within a two-year period commencing on the Date of Substantial Completion.

C. Finish Warranty: Provide five-year manufacturer warranty against excessive degradation of finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS

2.01 CONCRETE FLOOR FINISH APPLICATIONS

A. Liquid Densifier and Hardener:

B. Penetrating Clear Sealer:

C. Clear Coating:

2.02 DENSIFIERS AND HARDENERS

A. Liquid Densifier and Hardener: Penetrating chemical compound that reacts with concrete, filling the pores and dustproofing; for application to concrete after set.
   1. Composition: Sodium silicate.
      a. Performance Criteria:
         1) Abrasion Resistance: ASTM C779 - Up to 100% increase in abrasion resistance.

2) Coefficient of Friction: ASTM F609 >.70

b. Products:
   1) Euclid Chemical Company; EUCO DIAMOND HARD: www.euclidchemical.com/#sle.
   2) Kaufman Products Inc; SureHard: www.kaufmanproducts.net/#sle.
   3) W. R. Meadows, Inc; Liqui-Hard Ultra: www.wrmeadows.com/#sle.
   4) Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 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.

3.02 GENERAL

A. Apply materials in accordance with manufacturer's instructions.

3.03 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. Verify that water vapor emission from concrete and relative humidity in concrete are within limits established by coating manufacturer.

C. Protect adjacent non-coated areas from drips, overflow, and overspray; immediately remove excess material.

D. Apply coatings in accordance with manufacturer's instructions, matching approved mock-ups for color, special effects, sealing and workmanship.

E. Protect finished surface from construction damage.

END OF SECTION

SECTION 03 4500
PRECAST ARCHITECTURAL CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Architectural precast concrete wall panels with integral insulation.

B. Architectural precast concrete accessories.

C. Supports, anchors, and attachments.

D. Grouting under panels.

E. Intermediate and perimeter joint seals.

1.02 RELATED REQUIREMENTS

A. Section 07 2100 - Thermal Insulation: Integral insulation.

B. Section 07 6200 - Sheet Metal Flashing and Trim: Reglets recessed in units.

C. Section 07 9200 - Joint Sealants: Sealing perimeter and intermediate joints.

1.03 REFERENCE STANDARDS

A. ACI 301 - Specifications for Concrete Construction; 2020.

B. ACI 318 - Building Code Requirements for Structural Concrete; 2019 (Reapproved 2022).

C. ASHRAE (FUND) - ASHRAE Handbook - Fundamentals; Most Recent Edition Cited by Referring Code or Reference Standard.

D. ASHRAE Std 90.1 I-P - Energy Standard for Buildings Except Low-Rise Residential Buildings; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

E. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

F. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

G. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2021.

H. ASTM A563/A563M - Standard Specification for Carbon and Alloy Steel Nuts (Inch and Metric); 2021a.

I. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2022.

J. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement; 2019.

K. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2022.

L. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2022.

M. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2023.

N. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.

O. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a (Reapproved 2016).

P. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2021.

Q. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2023).

R. IAS AC157 - Accreditation Criteria for Fabricator Inspection Programs for Reinforced and Precast/Prestressed Concrete; 2017.

S. PCI MNL-117 - Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products; 2013.

T. PCI MNL-120 - PCI Design Handbook; 2017, with Errata (2021).

U. PCI MNL-122 - Architectural Precast Concrete: Fully Revised Manual Including New Sections, Extensive Updates, and Detailed Specifications to Meet Today's Construction Needs.; 2007.

V. PCI MNL-123 - Connections Manual: Design and Typical Details of Connections for Precast and Prestressed Concrete; 1988.

W. PCI MNL-135 - Tolerance Manual for Precast and Prestressed Concrete Construction; 2000.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week prior to commencing work of this section.

1.05 SUBMITTALS

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

B. Product Data: Manufacturer's information on accessory products, including pigments, admixtures, inserts, plates, etc.

C. Shop Drawings: Indicate layout, unit locations, configuration, unit identification marks, reinforcement, integral insulation, insulated panel system connectors, connection details, support items, location of lifting devices, dimensions, openings, and relationship to adjacent materials. Provide erection drawings.
   1. Include details of mix designs.
   2. Include structural design calculations.

D. Samples: Submit two verification samples, 12 inch by 12 inch in size, illustrating surface finish, color and texture.
   1. After sample approval, provide two Mock-up panels with a minimum of 16 sq. ft. incorporating full scale details of architectural features, finishes, textures, and transitions for architect review prior to full scale fabrication.

E. Delegated-Design Submittal: For precast structural concrete indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer, licensed int he State of Iowa, responsible for their preparation.

F. Integrally Insulated Panel System Manufacturer's Installation Instructions: Submit manufacturer's current installation instructions for system specified. Certify that copies are available at fabrication site prior to start of precast fabrication

G. Fabricators Qualification Statement: Provide documentation of experience and PCI Certification.

H. 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.

I. Integrally Insulated Panel System Design Data:
   1. Thermal Resistance: Submit calculations complying with ASHRAE Std 90.1 I-P, isothermal planes method, and demonstrating thermal resistance of integrally insulated panel system.
   2. Dew Point: Submit calculations complying with ASHRAE (FUND). Demonstrate condensation prevention, prevention of frost or ice formation on panels surfaces, and inner wall condensation.
   3. Thermal Bowing and Crack Mitigation: Submit drawing details and written procedures for mitigation and repair of bowing and cracking in insulated concrete panels without full-thickness concrete sections or metallic connectors between wythes.

J. Maintenance Data: Indicate surface cleaning instructions.

1.06 QUALITY ASSURANCE

A. Design Engineer Qualifications: Design precast concrete units under direct supervision of a Professional Structural Engineer experienced in design of precast concrete and licensed in the State in which the Project is located.

B. Fabricator Qualifications:

1. Plant certified under Precast/Prestressed Concrete Institute Plant Certification Program; product group and category A1 - Architectural Precast Concrete.
2. Plant certified under Architectural Precast Association Plant Certification Program for production of architectural precast concrete.
3. Fabricator Qualifications: Precast concrete fabricator accredited by IAS according to IAS AC157.

C. 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.

1.07 MOCK-UP

A. Provide full size or 4'x4' panel mock-up, with lifting device, and attachment points, and finish in accordance with approved sample.

B. Include mock-up panel with insulated panel and sealants.

C. Mock-up may remain as part of the Work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Handling: Lift and support precast units only from support points.

B. Blocking and Lateral Support During Transport and Storage: Use materials that are clean, non-staining, and non-harmful to exposed surfaces. Provide temporary lateral support to prevent bowing and warping.

C. Protect units to prevent staining, chipping, or spalling of concrete.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Architectural Precast Concrete:
1. Any manufacturer holding a PCI Group A Plant Certification for the types of products specified; see www.pci.org/#sle.

2.02 PRECAST UNITS, GENERAL

A. Precast Architectural Concrete Units: Comply with PCI MNL-120, PCI MNL-122, PCI MNL-123, PCI MNL-135, and ACI 318.
1. Concrete: Minimum 5000 psi (34 MPa), 28 day strength, air entrained to 5 to 7 percent; comply with ACI 301
2. Design Loads: Static loads, anticipated dynamic loading, including positive and negative wind loads, thermal movement loads, and erection forces as defined by applicable code.
3. Calculate structural properties of units in accordance with ACI 318.
4. Other Cementitious Materials: Replace as much Portland cement as possible with fly ash, ground granulated blast furnace slag, silica fume, or rice hull ash as is consistent with strength and appearance requirements.
5. Accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.
6. Provide connections that accommodate building movement and thermal movement and adjust to misalignment of structure without unit distortion or damage.
    a. Thermal Movements: Provide for in-plane thermal movements resulting from annual ambient temperature changes of minus 18 to plus 120 deg F (minus 10 to plus 67 deg C).

B. Configurations:
1. Exterior Walls 10 inch (4-3-3) insulated panels as Basis of Design.

C. Finish Type Interior: Ensure exposed-to-view finish surfaces of precast units are uniform in color and appearance.
1. Interior Finish shall be a wet trowel finish.

D. Finish Type Exterior: Textured finish. Remove excess concrete from joints and faces of units cast with form liner or other texture. Protect adjacent surfaces.

1. Exterior finish shall match existing vertically raked precast finish as closely as possible. Contractor option for achieving this finish are as follows:
   a. Wet roller raked or ribbed 2" wide flutes with 1" deep x 1/4" wide reveales uniform impressioned vertical finish.
   b. Provide formliner to match existing precast concrete profile, approximately 2" wide flutes with 1" deep x 1/4" wide reveals, as closely as possible and as approved by Architect.

2.03 REINFORCEMENT

A. Reinforcing Steel: ASTM A615/A615M, Grade 40 (40,000 psi).
   1. Deformed billet-steel bars.
   2. Galvanized in accordance with ASTM A767/A767M, Class I.

B. Steel Welded Wire Reinforcement (WWR): Plain type ASTM A1064/A1064M.
   1. Form: Flat Sheets.

C. Prestressing Strand: ASTM A 416/A 416M, Grade 270 (Grade 1860), uncoated, seven-wire, low-relaxation strand

2.04 CONCRETE MATERIALS

A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
   1. For surfaces exposed to view in finished structure, colorded of same type, brand, and mill source throughout the precast concrete production.

B. Fine and Coarse Structural Aggregates: ASTM C33/C33M.

C. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

D. Fiber Reinforcement: Synthetic fiber shown to be resistant to long-term deterioration when exposed to moisture and alkalis; 1/2 inch length.

E. Air Entrainment Admixture: ASTM C260/C260M.

F. Grout:
   1. Non-shrink, non-metallic, minimum 10,000 psi, 28 day strength.

2.05 FORM LINERS

A. Manufacturers:
   1. Basis of Design: Fitzgerald Formliners Fractured Rib: www.formliners.com/#sle.
   2. Greenstreak: www.greenstreak.com/#sle.
   3. Symons Corporation: www.symons.com/#sle.
   4. Reckli; www.reckli.com/#sle.
   5. Substitutions: See Section 01 6000 - Product Requirements.

B. Material: Glass fiber reinforced polyester, Acrylonitrile butadiene styrene, Polyvinyl chloride, or Polyurethane.

C. Configuration: Approved by Architect with pattern & texture oriented vertically to match existing precast finish as closely as possible. .
   1. Formliner selection shall be from manufacturer's full line. A custom formliner is not required.

2.06 SUPPORT DEVICES

A. Connecting and Support Devices; Anchors and Inserts: ASTM A36/A36M steel; hot-dip galvanized in accordance with ASTM A153/A153M.
   1. Clean surfaces of rust, scale, grease, and foreign matter.
   2. Prime paint in one coat, except surfaces in direct contact with concrete or requiring field welding.

B. Bolts, Nuts, and Washers: ASTM A307 heavy hex bolts, Type A, hot-dip galvanized, with matching ASTM A563/A563M nuts and matching washers.

C. Embedded Plates: Supply embedded plates required for connection to cast-in-place concrete to the contractor Embedded plates will be installed by the trade contractor in accordance with details and locations shown on a drawing provided by the precast supplier.

D. Primer: Zinc rich type.

E. Contractor's Option: Wythe Connectors: epoxy-coated carbon-fiber grid manufactured to connect wythes of precast concrete panels.

2.07 INSULATION

A. Integral Insulation: Rigid extruded polystyrene (XPS) board insulation, as specified in Section 07 2100.

2.08 FABRICATION

A. Fabricate in compliance with PCI MNL-117 and PCI MNL-135.

B. Maintain plant records and quality control program during production of precast units. Make records available upon request.

C. Use rigid molds, constructed to maintain precast unit uniform in shape, size, and finish.

D. Use form liners in accordance with manufacturer's instructions.

E. Place thin brick in form liner in accordance with manufacturer's instructions. Mix bricks from several cartons for uniform distribution of color variations.

F. Maintain consistent quality during manufacture.

G. Fabricate connecting devices, plates, angles, items fit to steel framing members, inserts, bolts, and accessories. Fabricate to permit initial placement and final attachment.

H. Embed reinforcing steel, anchors, inserts plates, angles, and other cast-in items.

I. Integrally Insulated Panel System: Comply with manufacturer's written installation instructions.

J. Cast rigid insulation into units. Cut drainage channels in exterior face of insulation to route moisture to exterior. Position weep drains to suit. Maintain drainage channels clear.

K. Place recessed flashing reglets continuous and straight.

L. Locate hoisting devices to permit removal after erection.

M. Cure units to develop concrete quality, and to minimize appearance blemishes such as non-uniformity, staining, or surface cracking.

N. Minor patching in plant is acceptable, providing structural adequacy and appearance of units is not impaired.

2.09 FABRICATION TOLERANCES

A. Comply with PCI MNL-117 and PCI MNL-135.

2.10 ACCESSORIES

A. Bearing Pads: High density plastic; Shore A Durometer ; 1/8 inch thick, smooth both sides.

B. Reglets: Specified in Section 07 6200.

C. Joint Sealants: Reference section 07 9200 for requirements.

D. Cast-In Structural Thermal Break for Continuously Insulated Panels: Rigid, closed-cell PVC foam connectors; provides thermal break at panel edges as well as door and window openings in panels.
   1. Manufacturers:
      a. Nox-Crete Inc; TigerLoc: www.nox-crete.com/#sle.
      b. Substitutions: See Section 01 6000 - Product Requirements.

2.11 SOURCE QUALITY CONTROL

A. Take one air entrainment test cylinders for each set of exterior concrete test cylinders taken.

B. Take water absorption test in accordance with PCI MNL-117.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that building structure, anchors, devices, and openings are ready to receive work of this section.

3.02 PREPARATION

A. Provide for erection procedures and induced loads during erection. Maintain temporary bracing in place until final support is provided.

3.03 ERECTION

A. Erect units without damage to shape or finish. Replace or repair damaged panels.

B. Erect units level and plumb within allowable tolerances.

C. Align and maintain uniform horizontal and vertical joints as erection progresses.

D. Weld units in place. Perform welding in accordance with AWS D1.1/D1.1M.

E. Touch-up field welds and scratched or damaged primed painted surfaces.

F. Set vertical units dry, without grout, attaining joint dimension with lead or plastic spacers. Pack grout to base of unit.

G. Exposed Joint Dimension: 3/4 inch. Adjust units so that joint dimensions are within tolerances.

H. Seal perimeter and intermediate joints in accordance with Section 07 9200.

3.04 TOLERANCES

A. Erect members level and plumb within allowable tolerances. Comply with PCI MNL-135.

3.05 CLEANING

A. Clean all exposed exterior surfaces of dirt, and/ or any other construction related matter..

B. Clean all exposed interior surfaces slated to receive a finish. Coordinate with prepping requirements of assigned finishes.

3.06 PROTECTION

A. Protect installed panel finishes from subsequent construction operations.

END OF SECTION

SECTION 04 2000
UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete block.

B. Mortar and grout.

C. Reinforcement and anchorage.

D. Flashings.

E. Lintels.

F. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 05 5000 - Metal Fabrications: Loose steel lintels.

B. Section 07 2500 - Weather Barriers: Water-resistive barriers applied to exterior face of backing sheathing or unit masonry substrate.

C. Section 07 9200 - Joint Sealants: Sealing control and expansion joints.

1.03 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

B. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2022.

C. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2019.

D. ASTM A951/A951M - Standard Specification for Steel Wire for Masonry Joint Reinforcement; 2022.

E. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2022.

F. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units; 2023.

G. ASTM C91/C91M - Standard Specification for Masonry Cement; 2023.

H. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units; 2023.

I. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2018.

J. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.

K. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2018.

L. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2019a, with Editorial Revision.

M. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2018.

N. ASTM C476 - Standard Specification for Grout for Masonry; 2023.

O. ASTM D4637/D4637M - Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane; 2015, with Editorial Revision (2022).

P. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022, with Errata.

1.04 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: Indicate pertinent dimensions, materials, anchorage, size and type of fasteners, and accessories for brickwork support system.

D. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.

1.05 QUALITY ASSURANCE

A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.

1.06 MOCK-UPS

A. Construct a masonry wall as a mock-up panel sized 4 feet long by 6 feet high; include mortar, accessories, structural backup, reinforcement, and wall openings in mock-up.

B. Locate where directed.

C. Mock-up may remain as part of work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS (CMUS)

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. Special Shapes: Provide nonstandard blocks configured for corners, lintels, headers, control joint edges, jambs, sashes,, and other detailed conditions.
      a. Provide bullnose units for all exposed corners.
   3. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1900 psi.
   4. Weight Classification: ASTM C90, normal weight, Grade N.
   5. Provide Type I, moisture-controlled units.
   6. Pattern and Texture for Standard Units
      a. Exposed Faces: Manufacturer's standard color and texture.
      b. Pattern: standard.
      c. Tool all joints concave.

2.02 MORTAR AND GROUT MATERIALS

A. Masonry Cement: ASTM C91/C91M, Type N.

B. Portland Cement: ASTM C150/C150M, Type I.
   1. Not more than 0.60 percent alkali.

C. Hydrated Lime: ASTM C207, Type S.

D. Mortar Aggregate: ASTM C144.

E. Grout Aggregate: ASTM C404.

F. Water: Clean and potable.

2.03 REINFORCEMENT AND ANCHORAGE

A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi), plain billet bars; uncoated.

B. Weldable Steel Reinforcing Bars: ASTM A706, Grade 60.

C. Masonry Joint Reinforcement and Ties: ASTM A951/A951M; hot-dip galvanized, carbon-steel wire for both interior and exterior walls.
   1. Type: Truss or ladder type with single pair of side rods.
   2. Material: ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M Class 3.

3. Wire Size : 0.1483 inch diameter or W1.7 and 0.1483 inch diameter or 9 gauge W1.7 cross rods.
4. Spacing of Cross Rods, Tabs and Cross Ties: Not more than 16 inches o.c. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.

D. Flexible Anchors: 2-piece anchors that permit differential movement between masonry and building frame, sized to provide not less than 5/8 inch of mortar coverage from masonry face.

E. Two-Piece Wall Ties: Formed steel wire, 0.1875 inch thick, adjustable, eye and pintle type, hot dip galvanized to ASTM A 153/A 153M, Class B, sized to provide not less than 5/8 inch of mortar coverage from masonry face and to allow vertical adjustment of up to 1-1/4 in.

F. Metal-to-Metal Fasteners: Self-drilling, self-tapping screws; corrosion resistant finish or hot dip galvanized to ASTM A153/A153M.

2.04 ACCESSORIES

A. Preformed Control Joints: Tamperproof Rubber material. Provide with corner and tee accessories, fused joints.
1. Manufacturers:
a. Blok-Lok Limited: www.blok-lok.com/#sle.
b. Hohmann & Barnard, Inc: www.h-b.com/#sle.
c. WIRE-BOND: www.wirebond.com/#sle.
d. Substitutions: See Section 01 6000 - Product Requirements.

B. Joint Filler: Closed cell rubber; oversized 50 percent to joint width; self expanding; in maximum lengths available.
1. Manufacturers:
a. Hohmann & Barnard, Inc: www.h-b.com/#sle.
b. WIRE-BOND: www.wirebond.com/#sle.
c. Substitutions: See Section 01 6000 - Product Requirements.

C. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

2.05 MORTAR AND GROUT MIXING

A. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.
1. Masonry below grade and in contact with earth: Type S.
2. Interior, loadbearing masonry: Type N.
3. Interior, non-loadbearing masonry: Type O.

B. Grout: ASTM C476; consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches.

C. Admixtures: Add to mixture at manufacturer's recommended rate and in accordance with manufacturer's instructions; mix uniformly.

D. Mixing: Use mechanical batch mixer and comply with referenced standards.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive masonry.

B. Verify that related items provided under other sections are properly sized and located.

C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 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.

3.03 COLD AND HOT WEATHER REQUIREMENTS

A. Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

3.04 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

C. Concrete Masonry Units:
   1. Bond: Running.
   2. Coursing: One unit and one mortar joint to equal 8 inches.
   3. Mortar Joints: Concave.

3.05 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 with face shell bedding on head and bed joints.

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. Interlock intersections and external corners.

G. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.

H. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

I. Cut mortar joints flush where wall tile is scheduled or resilient base is scheduled.

J. Isolate masonry partitions from vertical structural framing members with a control joint as indicated.

K. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.

3.06 REINFORCEMENT AND ANCHORAGE - GENERAL AND SINGLE WYTHE MASONRY

A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

C. Place continuous joint reinforcement in first and second joint below top of walls.

D. Embed longitudinal wires of joint reinforcement in mortar joint with at least 5/8 inch mortar cover on each side.

E. Lap joint reinforcement ends minimum 6 inches.

F. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Unless otherwise indicated on drawings or closer spacing is indicated under specific wall type, space anchors at maximum of 36 inches horizontally and 24 inches vertically.

3.07 LINTELS

A. Install loose steel lintels over openings.

B. Install reinforced unit masonry lintels over openings where steel or precast concrete lintels are not scheduled.
   1. Do not splice reinforcing bars.

2. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
3. Place and consolidate grout fill without displacing reinforcing.
4. Allow masonry lintels to attain specified strength before removing temporary supports.

C. Maintain minimum 8 inch bearing on each side of opening.

3.08 GROUTED COMPONENTS

A. Reinforce bond beams with 2, No. 5 bars, 4 inch from bottom web.

B. Lap splices minimum 24 bar diameters.

C. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.

D. Place and consolidate grout fill without displacing reinforcing.

E. At bearing locations, fill masonry cores with grout for a minimum 12 inches either side of opening.

3.09 CONTROL AND EXPANSION JOINTS

A. Do not continue horizontal joint reinforcement through control or expansion joints.

B. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.

3.10 BUILT-IN WORK

A. As work progresses, install built-in metal door frames, glazed frames, fabricated metal frames, and window frames and other items to be built into the work and furnished under other sections.

B. Install built-in items plumb, level, and true to line.

C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.

3.11 TOLERANCES

A. Install masonry within the site tolerances found in TMS 402/602.

B. Maximum Variation from Alignment of Columns: 1/4 inch.

C. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.

D. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.

E. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

F. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

G. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.

H. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.12 CUTTING AND FITTING

A. Cut and fit for chases, pipes, conduit, sleeves, grounds, and all other penetrations. Coordinate with other sections of work to provide correct size, shape, and location.

B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.13 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.

3.14 CLEANING

A. Remove excess mortar and mortar droppings.

B. Replace defective mortar. Match adjacent work.

C. Clean soiled surfaces with cleaning solution.

3.15 PROTECTION

A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

3.16 COATINGS

END OF SECTION

SECTION 05 1200
STRUCTURAL STEEL FRAMING

PART 1 - 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. Structural steel.
   2. Grout.

B. Related Requirements:

   1. Section 01 45 00 “Special Inspections and Tests” for required verifications and inspections.
   2. Section 053100 "Steel Decking" for field installation of shear connectors through deck.
   3. Section 055000 "Metal Fabrications" for miscellaneous steel fabrications and other steel items not defined as structural steel.

1.03 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

1.04 SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Show fabrication of structural-steel components.

   1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
   2. Include embedment Drawings.
   3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
   4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.

C. Delegated-Design Submittal: For structural-steel connections indicated to comply with design loads, include analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

D. Qualification Data: For Installer and fabricator.

E. Welding certificates.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: Must comply with at least one of the following:

   1. Company participating in the AISC Quality Certification Program, and is designated an AISC-certified plant, Certified Building Fabricator Category BU.
   2. Company that specializes in performing the work of this section; with prior experience on minimum of five (5) projects similar in size and scope to this Project. The Fabricator shall indicate compliance with these qualifications requirements and as follows:

a. Fabricator shall select a Special Inspection Company; and shall provide access to the Fabricator's shop for Special Inspector to perform inspection required by IBC 2015 Chapter 1705 and according to section 01 45 00 "STRUCTURAL TESTS AND SPECIAL INSPECTIONS."
b. Cost of the Special Inspector, and related travel expenses for inspection at the Fabricator's shop, shall be paid by the Fabricator.

B. Installer Qualifications: Must comply with at least one of the following:

1. Company participating in the AISC Quality Certification Program, and is designated an AISC-certified erector, Category CSE.
2. Company that specializes in performing the work of this section.

C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

D. Comply with applicable provisions of the following specifications and documents:

1. AISC 303.
2. AISC 360.
3. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

1.06 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 F 1852 fasteners and for retesting fasteners after lubrication.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Connections: Provide details of simple shear connections required by the Contract Documents to be selected or completed by structural-steel fabricator, including comprehensive engineering analysis by a qualified professional engineer, to withstand loads indicated and comply with other information and restrictions indicated.

1. Select and complete connections using schematic details indicated and AISC 360.
2. Use Allowable Stress Design; data are given at service-load level unless noted otherwise.

2.02 STRUCTURAL-STEEL MATERIALS

A. W-Shapes: ASTM A 992/A 992M.

B. Channels and Angles Shapes: ASTM A 36/A 36M.

C. Plate and Bar: ASTM A 36/A 36M.

D. Cold-Formed Hollow Structural Sections: ASTM A 500/A 500M, Grade B or C, structural tubing.

E. Welding Electrodes: Comply with AWS requirements.

2.03 BOLTS, CONNECTORS, AND ANCHORS

A. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade C, heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers; all with plain finish.

B. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 1, heavy-hex or round head assemblies consisting of steel structural bolts with splined ends, heavy-hex carbon-steel nuts, and hardened carbon-steel washers.

1. Finish: Plain.

C. Shear Connectors: ASTM A 108, Grades 1015 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1/D1.1M, Type B.

D. Headed Anchor Rods: ASTM F 1554, Grade 36, straight.

1. Nuts: ASTM A 563 heavy-hex carbon steel.
2. Plate Washers: ASTM A 36/A 36M carbon steel.
3. Washers: ASTM F 436, Type 1, hardened carbon steel.
4. Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C.

E. Threaded Rods: ASTM A 36/A 36M.

1. Nuts: ASTM A 563 hex carbon steel.
2. Washers: ASTM F 436, Type 1, hardened carbon steel.
3. Finish: Plain.

F. Sleeve Nuts: Made from cold-finished carbon steel bars, ASTM A 108, Grade 1018.

G. Epoxy Adhesive Anchors: Install per manufacturer’s instructions; size and embedment depth as indicated on Drawings.

1. Products:

a. HIT-HY200 Adhesive Anchoring System manufactured by Hilti, Inc.
b. PE1000+ Epoxy Injection Adhesive Anchoring System manufactured by Powers Fasteners.
c. SET-EP Epoxy Adhesive manufactured by Simpson Strong-Tie Company.
d. Substitutions: As approved by Engineer prior to bid.

2.04 PRIMER

A. Primer: Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.

1. Color: Gray

B. Galvanizing Repair Paint: ASTM A 780/A 780M.

C. Bitumous Paint: Cold-applied asphalt coating complying with SSPC Paint 12.

2.05 GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107/C 1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.06 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," and to AISC 360.

1. Camber structural-steel members where indicated.
2. Fabricate beams with rolling camber up.

3. Identify high-strength structural steel according to ASTM A 6/A 6M and maintain markings until structural steel has been erected.
4. Mark and match-mark materials for field assembly.
5. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.

1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.

C. Bolt Holes: Cut, drill, mechanically thermal cut, or punch standard bolt holes perpendicular to metal surfaces.

D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.

E. 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.

F. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel members.

1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.07 SHOP CONNECTIONS

A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.

1. Joint Type: Snug tightened or Pretensioned.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in AISC 303 for mill material.

2.08 SHOP PRIMING

A. Shop prime steel surfaces except the following:

1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
2. Surfaces to be field welded.
3. Surfaces to receive spray applied fireproofing.

B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to one of the following specifications and standards:

1. SSPC-SP 2, "Hand Tool Cleaning."
2. SSPC-SP 3, "Power Tool Cleaning."

C. Priming: 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.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
2. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

2.09 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/A 123M.

1. Fill vent and drain holes that are exposed in the finished Work unless they function as weep holes, by plugging with zinc solder and filing off smooth.
2. Galvanize members indicated and members attached to structural-steel frame and located in exterior walls.

2.10 SOURCE QUALITY CONTROL

A. Provide source quality control according to corresponding Fabricator qualification:

1. AISC Certified Plant:
    a. Provide Certificate of Compliance for documentation that the fabricated work is performed in accordance with the Contract Documents.
2. Non-AISC Certified Plant:
    a. Engage a qualified Testing Agency to perform shop tests and inspections according to section 01 45 00 “STRUCTURAL TESTS AND SPECIAL INSPECTIONS.” Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.
B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated.

3.03 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.
B. Baseplates: Clean concrete 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. 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.
    3. 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.
C. Maintain erection tolerances of structural steel within AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."
D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that are in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
    1. Level and plumb individual members of structure.

E. Do not use thermal cutting during erection unless approved by Architect. Finish thermally cut sections within smoothness limits in AWS D1.1/D1.1M.
F. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.
G. 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.

3.04 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
   1. Joint Type: Snug tightened or Pretensioned.
B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
   1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
   2. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," for mill material.

3.05 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
B. Inspections: Refer to Section 01 45 00 “Special Inspections and Tests” for required verifications and inspections.

3.06 REPAIRS AND PROTECTION

A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing and repair galvanizing to comply with ASTM A 780/A 780M.
B. 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.

END OF SECTION

SECTION 05 2100
STEEL JOIST FRAMING

PART 1 - 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. K-series steel joists.
2. K-series steel joist substitutes.
3. Joist accessories.

B. Related Requirements:

1. Section 01 45 00 “Special Inspections and Tests” for required verifications and inspections.
2. Section 03 45 00 "Precast Architectural Concrete" for installing bearing plates in precast concrete.

1.03 SUBMITTALS

A. Product Data: For each type of joist, accessory, and product.
B. Shop Drawings:

1. Include layout, designation, number, type, location, and spacing of joists.
2. Include joining and anchorage details, bracing, bridging, and joist accessories; splice and connection locations and details; and attachments to other construction.
3. Indicate locations and details of bearing plates to be embedded in other construction.

C. Welding certificates.

D. Comprehensive engineering analysis of special joists signed and sealed by the qualified professional engineer responsible for its preparation.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: A manufacturer certified by SJI to manufacture joists complying with applicable standard specifications and load tables in SJI's "Specifications."

1. Manufacturer's responsibilities include providing professional engineering services for designing special joists to comply with performance requirements.

B. Welding Qualifications: Qualify field-welding procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle joists as recommended in SJI's "Specifications."
B. Protect joists from corrosion, deformation, and other damage during delivery, storage, and handling.

1.06 SEQUENCING

A. Coordinate steel bearing plates to be built into precast concrete wall panels and connections to structural steel construction.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide special joists and connections capable of withstanding design loads indicated.

1. Use ASD; data are given at service-load level unless noted otherwise.
2. Design special joists to withstand design loads with live-load deflections no greater than the following:

a. Roof Joists: Vertical deflection of 1/360 of the span for live load and 1/240 of the span for total load.

2.02 K-SERIES STEEL JOISTS

A. 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.
1. Joist Type: K-series steel joists and KCS-type K-series steel joists.

B. 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.

C. Provide holes in chord members for connecting and securing other construction to joists.

D. Camber joists according to SJI's "Specifications.".

2.03 PRIMERS

A. Primer: SSPC-Paint 15, or manufacturer's standard shop primer complying with performance requirements in SSPC-Paint 15.

1. Color: White

2.04 JOIST ACCESSORIES

A. Bridging: Provide bridging anchors and number of rows of horizontal or diagonal bridging of material, size, and type required by SJI's "Specifications" for type of joist, chord size, spacing, and span. Furnish additional erection bridging if required for stability.

B. Carbon-Steel Bolts and Threaded Fasteners: ASTM A 307, Grade A, carbon-steel, hex-head bolts and threaded fasteners; carbon-steel nuts; and flat, unhardened steel washers.

1. Finish: Plain, uncoated.

C. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy hex steel structural bolts; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers.

1. Finish: Plain.

D. Welding Electrodes: Comply with AWS standards.

E. Furnish miscellaneous accessories including splice plates and bolts required by joist manufacturer to complete joist assembly.

2.05 CLEANING AND SHOP PAINTING

A. Clean and remove loose scale, heavy rust, and other foreign materials from fabricated joists and accessories by hand-tool cleaning, SSPC-SP 2 or power-tool cleaning, SSPC-SP 3.

B. Apply one coat of shop primer to joists and joist accessories to be primed to provide a continuous, dry paint film not less than 1 mil thick.

PART 3 - EXECUTION

3.01 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.

3.02 INSTALLATION

A. Do not install joists until supporting construction is in place and secured.
B. Install joists and accessories plumb, square, and true to line; securely fasten to supporting construction according to SJI's "Specifications," joist manufacturer's written recommendations, and requirements in this Section.

1. Space, adjust, and align joists accurately in location before permanently fastening.
2. Install temporary bracing and erection bridging, connections, and anchors to ensure that joists are stabilized during construction.

C. Field weld joists to supporting steel bearing plates and framework. Coordinate welding sequence and procedure with placement of joists. Comply with AWS requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.

D. Install and connect bridging concurrently with joist erection before construction loads are applied. Anchor ends of bridging lines at top and bottom chords if terminating at walls or beams.

3.03 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector to perform field tests and inspections and prepare test reports.
B. Inspections: Refer to Section 01 45 00 “Special Inspections and Tests” for required verifications and inspections.
C. Correct deficiencies in Work that test and inspection reports have indicated are not in compliance with specified requirements.
D. Perform additional testing to determine compliance of corrected Work with specified requirements.

3.04 PROTECTION

A. Touchup Painting: After installation, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted joists, bearing plates, abutting structural steel, and accessories.

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.

B. 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.

END OF SECTION

SECTION 05 3100
STEEL DECKING

PART 1 - 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. Roof deck.
2. Composite floor deck.

B. Related Requirements:

1. Section 01 45 00 “Special Inspections and Tests” for required verifications and inspections.
2. Section 03 30 00 "Cast-in-Place Concrete" for normal-weight structural concrete fill over steel deck.
3. Section 05 12 00 "Structural Steel Framing" for shop- and field-welded shear connectors.
4. Section 05 50 00 "Metal Fabrications" for framing deck openings with miscellaneous steel shapes.

1.03 SUBMITTALS

A. Product Data: For each type of deck, accessory, and product indicated.

B. Shop Drawings:

1. Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

1.04 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

PART 2 - PRODUCTS

2.01 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."

2.02 ROOF DECK

A. Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:

1. Prime-Painted Steel Sheet: ASTM A 1008/A 1008M, Structural Steel (SS), Grade 40 minimum, shop primed with manufacturer's standard baked-on, rust-inhibitive primer.
    a. Color: Bottom of deck shall be white and top of deck is manufacturer’s standard or white.
2. Deck Profile: Type WR, wide rib.
3. Profile Depth: 1-1/2 inches.

4. Design Uncoated-Steel Thickness: As indicated.
5. Span Condition: Triple span or more.
6. Side Laps: Overlapped or interlocking seam at Contractor's option.

2.03 COMPOSITE FLOOR DECK

A. Composite Floor Deck: Fabricate panels, with integrally embossed or raised pattern ribs and interlocking side laps, to comply with "SDI Specifications and Commentary for Composite Steel Floor Deck," in SDI Publication No. 31, with the minimum section properties indicated, and with the following:

1. Galvanized-Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 40, G60 zinc coating.
2. Profile Depth: 3 inches.
3. Design Uncoated-Steel Thickness: As indicated.
4. Span Condition: Double span or more.

2.04 ACCESSORIES

A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.
B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.
C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.
D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.
E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.
F. Pour Stops and Girder Fillers: Steel sheet, minimum yield strength of 33,000 psi, of same material and finish as deck, and of thickness and profile recommended by SDI Publication No. 31 for overhang and slab depth.
G. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck unless otherwise indicated.
H. Recessed Sump Pans: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck, with 3-inch wide flanges and level recessed pans of 1-1/2-inch minimum depth. For drains, cut holes in the field.
I. Galvanizing Repair Paint: ASTM A 780.
J. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.
B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, and requirements in this Section.
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. Do not stretch or contract side-lap interlocks.
D. Place deck panels flat and square and fasten to supporting frame without warp or deflection.

E. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.

F. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.

G. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.

H. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions. Submit mechanical fastener product data and fastener layout information for review prior to installation.

3.03 ROOF-DECK INSTALLATION

A. Fasten roof-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated or arc seam welds with an equal perimeter that is not less than 1-1/2 inches long, and as follows:

1. Weld Diameter: 5/8 inch, nominal.

2. Weld Spacing: Weld edge and interior ribs of deck units with a minimum of two welds per deck unit at each support. Space welds as indicated.

B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals indicated, and as follows:

1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.
2. Mechanically clinch or button punch.

C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:

1. End Joints: Lapped 2 inches minimum.

D. Roof Sump Pans and Sump Plates: Install over openings provided in roof deck and fasten flanges to top of deck. Space fasteners not more than 12 inches apart with at least one fastener at each corner.

E. Miscellaneous Roof-Deck Accessories: Install ridge and valley plates, finish strips, end closures, and reinforcing channels according to deck manufacturer's written instructions. Fasten to substrate to provide a complete deck installation.

F. Flexible Closure Strips: Install flexible closure strips over partitions, walls, and where indicated. Install with adhesive according to manufacturer's written instructions to ensure complete closure.

3.04 FLOOR-DECK INSTALLATION

A. Fasten floor-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated and as follows:

1. Weld Diameter: 5/8 inch, nominal.

2. Weld Spacing: Space and locate welds as indicated.

B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of half of the span or 36 inches, and as follows:

1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.
2. Mechanically clinch or button punch.

C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:

1. End Joints: Lapped or butted at Contractor's option.

D. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure according to SDI recommendations unless otherwise indicated.

E. Floor-Deck Closures: Weld steel sheet column closures, cell closures, and Z-closures to deck, according to SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of deck.

3.05 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
B. Inspections: Refer to Section 01 45 00 “Special Inspections and Tests” for required verifications and inspections.
C. Testing 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.

3.06 PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

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.

1. Apply repair paint, of same color as adjacent shop-primed deck, to bottom surfaces of deck exposed to view.

C. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 05 4000
COLD-FORMED METAL FRAMING

PART 1 - 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. Load-bearing wall framing.

B. Related Requirements:

1. Section 055000 "Metal Fabrications" for connections.

1.03 SUBMITTALS

A. Product Data: For each type of cold-formed steel framing product and accessory.
B. Shop Drawings:

1. Include layout, spacings, sizes, thicknesses, and types of cold-formed steel framing; fabrication; and fastening and anchorage details, including mechanical fasteners.
2. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.

C. Delegated-Design Submittal: For cold-formed steel framing.

D. Product Test Reports: For each listed product, for tests performed by manufacturer and witnessed by a qualified testing agency.

1. Steel sheet.
2. Expansion anchors.
3. Power-actuated anchors.
4. Mechanical fasteners.
5. Vertical deflection clips.
6. Horizontal drift deflection clips
7. Miscellaneous structural clips and accessories.

E. Research Reports: For non-standard cold-formed steel framing, from ICC-ES.

1.04 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

B. Comply with AISI S230 "Standard for Cold-Formed Steel Framing - Prescriptive Method for One and Two Family Dwellings."

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect cold-formed steel framing from corrosion, moisture staining, deformation, and other damage during delivery, storage, and handling.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. ClarkDietrich Building Systems.

2. Marino\WARE.
3. Steel Network, Inc. (The).

2.02 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design cold-formed steel framing.

B. Structural Performance: Provide cold-formed steel framing capable of withstanding design loads within limits and under conditions indicated.

1. Design Loads: As indicated on bid documents.
2. Deflection Limits: Design framing systems to withstand design loads without deflections greater than the following:
    a. Exterior Load-Bearing Wall Framing: Horizontal deflection of 1/240 of the wall height.
3. Design exterior wall framing to accommodate horizontal deflection without regard for contribution of sheathing materials.

C. Cold-Formed Steel Framing Design Standards:

1. Floor and Roof Systems: AISI S210.
2. Wall Studs: AISI S211.
3. Headers: AISI S212.
4. Lateral Design: AISI S213.

D. AISI Specifications and Standards: Unless more stringent requirements are indicated, comply with AISI S100 and AISI S200.

2.03 COLD-FORMED STEEL FRAMING, GENERAL

A. Steel Sheet: ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of grade and coating weight as follows:

1. Grade: As required by structural performance.
2. Coating: G60 (Z180).

B. Steel Sheet for Vertical Deflection Clips: ASTM A 653/A 653M, structural steel, zinc coated, of grade and coating as follows:

1. Grade: As required by structural performance.
2. Coating: G60 (Z180).

2.04 LOAD-BEARING WALL FRAMING

A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: As required by structural performance, 0.0428 minimum.
2. Flange Width: 1-5/8 inches (41 mm).

B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with straight flanges, and as follows:

1. Minimum Base-Metal Thickness: As required by structural performance, 0.0428 minimum.
2. Flange Width: 1-1/4 inches (32mm)

C. Steel Box or Back-to-Back Headers: Manufacturer's standard C-shapes used to form header beams, of web depths indicated, unpunched, with stiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: As required by structural performance, 0.0428 minimum.

2. Flange Width: 1-5/8 inches (41 mm).

2.05 FRAMING ACCESSORIES

A. Fabricate steel-framing accessories from steel sheet, ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members.

B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:

1. Supplementary framing.
2. Bracing, bridging, and solid blocking.
3. Web stiffeners.
4. Anchor clips.
5. End clips.
6. Foundation clips.
7. Gusset plates.
8. Stud kickers and knee braces.
9. Joist hangers and end closures.
10. Hole reinforcing plates.
11. Backer plates.

2.06 ANCHORS, CLIPS, AND FASTENERS

A. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123/A 123M.

B. Anchor Bolts: ASTM F 1554, Grade 36, threaded carbon-steel hex-headed bolts and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A 153/A 153M, Class C.

C. Expansion Anchors: Fabricated from corrosion-resistant materials, with allowable load or strength design capacities calculated according to ICC-ES AC193 and ACI 318 greater than or equal to the design load, as determined by testing per ASTM E 488 conducted by a qualified testing agency.

D. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with allowable load capacities calculated according to ICC-ES AC70, greater than or equal to the design load, as determined by testing per ASTM E 1190 conducted by a qualified testing agency.

E. 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.

F. Welding Electrodes: Comply with AWS standards.

2.07 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: SSPC-Paint 20 or MIL-P-21035B.

B. Cement Grout: Portland cement, ASTM C 150, Type I; and clean, natural sand, ASTM C 404. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.

C. Nonmetallic, Nonshrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage-compensating agents, and plasticizing and water-reducing agents, complying with ASTM C 1107/C 1107M, with fluid consistency and 30-minute working time.

D. Shims: Load bearing, high-density multimonomer plastic, and nonleaching; or of cold-formed steel of same grade and coating as framing members supported by shims.

E. Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch (6.4 mm) thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.

2.08 FABRICATION

A. Fabricate cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.

1. Fabricate framing assemblies using jigs or templates.
2. Cut framing members by sawing or shearing; do not torch cut.
3. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, pneumatic pin fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.
    a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
    b. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by no fewer than three exposed screw threads.
4. Fasten other materials to cold-formed steel framing by welding, bolting, pneumatic pin fastening, or screw fastening, according to Shop Drawings.

B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.

C. Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet (1:960) and as follows:

1. Spacing: Space individual framing members no more than plus or minus 1/8 inch (3 mm) from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
2. Squareness: Fabricate each cold-formed steel framing assembly to a maximum out-of-square tolerance of 1/8 inch (3 mm).

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Before sprayed fire-resistive materials are applied, attach continuous angles, supplementary framing, or tracks to structural members indicated to receive sprayed fire-resistive materials.
B. After applying sprayed fire-resistive materials, remove only as much of these materials as needed to complete installation of cold-formed framing without reducing thickness of fire-resistive materials below that are required to obtain fire-resistance rating indicated. Protect remaining fire-resistive materials from damage.

C. Install load bearing shims or grout between the underside of load-bearing wall bottom track and the top of foundation wall or slab at locations with a gap larger than 1/4 inch (6 mm) to ensure a uniform bearing surface on supporting concrete or masonry construction.

D. Install sealer gaskets at the underside of wall bottom track or rim track and at the top of foundation wall or slab at stud or joist locations.

3.03 INSTALLATION, GENERAL

A. Cold-formed steel framing may be shop or field fabricated for installation, or it may be field assembled.
B. Install cold-formed steel framing according to AISI S200 and to manufacturer's written instructions unless more stringent requirements are indicated.

C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.

1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch (1.6 mm).

D. Install cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened.

1. Cut framing members by sawing or shearing; do not torch cut.
2. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.

a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
b. Locate mechanical fasteners and install according to Shop Drawings, and complying with requirements for spacing, edge distances, and screw penetration.

E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.

F. Install temporary bracing and supports to secure framing and support loads 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.

G. Do not bridge building expansion joints with cold-formed steel framing. Independently frame both sides of joints.

H. Install insulation, specified in Section 072100 "Thermal Insulation," in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.

I. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's approved or standard punched openings.

J. Erection Tolerances: Install cold-formed steel framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet (1:960) and as follows:

1. Space individual framing members no more than plus or minus 1/8 inch (3 mm) from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.04 LOAD-BEARING WALL INSTALLATION

A. Install continuous top and bottom tracks sized to match studs. Align tracks accurately and securely anchor at corners and ends, and at spacings as follows:

1. Anchor Spacing: As shown on shop drawings.

B. Squarely seat studs against top and bottom tracks with gap not exceeding of 1/8 inch (3 mm) between the end of wall framing member and the web of track. Fasten both flanges of studs to top and bottom tracks. Space studs as follows:

1. Stud Spacing: 16 inches max or as indicated on drawings.

C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar configurations.

D. Align studs vertically where floor framing interrupts wall-framing continuity. Where studs cannot be aligned, continuously reinforce track to transfer loads.

E. Align floor and roof framing over studs according to AISI S200, Section C1. Where framing cannot be aligned, continuously reinforce track to transfer loads.

F. Anchor studs abutting structural columns or walls, including masonry walls, to supporting structure as indicated.

G. Install headers over wall openings wider than stud spacing. Locate headers above openings as indicated. Fabricate headers of compound shapes indicated or required to transfer load to supporting studs, complete with clip-angle connectors, web stiffeners, or gusset plates.

1. Frame wall openings with not less than a double stud at each jamb of frame as indicated on Shop Drawings. Fasten jamb members together to uniformly distribute loads.
2. Install runner tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with clip angles or by welding, and space jack studs same as full-height wall studs.

H. Install supplementary framing, blocking, and bracing in stud framing indicated to support fixtures, equipment, services, casework, heavy trim, furnishings, and similar work requiring attachment to framing.

1. If type of supplementary support is not indicated, comply with stud manufacturer's written recommendations and industry standards in each case, considering weight or load resulting from item supported.

I. Install horizontal bridging in stud system, spaced vertically 48 inches (1220 mm). Fasten at each stud intersection.

1. Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs with a minimum of two screws into each flange of the clip angle for framing members up to 6 inches (150 mm) deep.
2. Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.
3. Bridging: Proprietary bridging bars installed according to manufacturer's written instructions.

J. Install steel sheet diagonal bracing straps to both stud flanges, terminate at and fasten to reinforced top and bottom tracks. Fasten clip-angle connectors to multiple studs at ends of bracing and anchor to structure.

K. Install miscellaneous framing and connections, including supplementary framing, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

3.05 FIELD QUALITY CONTROL

A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Field and shop welds will be subject to testing and inspecting.

C. Testing agency will report test results promptly and in writing to Contractor and Architect.

D. 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.

3.06 REPAIRS AND PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanized repair paint according to ASTM A 780 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 steel framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 05 5000
METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Steel framing and supports for mechanical and electrical equipment.
2. Steel framing and supports for applications where framing and supports are not specified in other Sections.
3. Shelf angles.
4. Metal bollards.
5. Loose bearing and leveling plates for applications where they are not specified in other Sections.

B. Products furnished, but not installed, under this Section include the following:
1. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.
2. Steel weld plates and angles for casting into concrete for applications where they are not specified in other Sections.

C. Related Requirements:
1. Section 033000 "Cast-in-Place Concrete" for installing anchor bolts, steel pipe sleeves, slotted-channel inserts, wedge-type inserts, and other items cast into concrete.
2. Section 042000 "Unit Masonry" for installing loose lintels, anchor bolts, and other items built into unit masonry.
3. Section 051200 "Structural Steel Framing."

1.3 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of metal fabrications that are anchored to or that receive other work. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.4 SUBMITTALS

A. Product Data: For the following:
1. Grout.

B. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

1.5 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

PART 2 - PRODUCTS

2.1 METALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

C. Steel Tubing: ASTM A 500/A 500M, cold-formed steel tubing.

D. Steel Pipe: ASTM A 53/A 53M, Standard Weight (Schedule 40) unless otherwise indicated.

2.2 FASTENERS

A. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A; with hex nuts, ASTM A 563; and, where indicated, flat washers.

B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 325, Type 3; with hex nuts, ASTM A 563, Grade C3; and, where indicated, flat washers.

C. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563; and, where indicated, flat washers.
   1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.

D. Anchors, General: Anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488/E 488M, conducted by a qualified independent testing agency.

E. Cast-in-Place Anchors in Concrete: Either threaded type or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F 2329.

F. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors.
   1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, unless otherwise indicated.

2.3 MISCELLANEOUS MATERIALS

A. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

B. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.

C. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.

D. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

E. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.4 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

C. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

D. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

2.5 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.

C. Galvanize miscellaneous framing and supports where indicated.

2.6 SHELF ANGLES

A. Fabricate shelf angles from steel angles of sizes indicated and for attachment to concrete framing. Provide horizontally slotted holes to receive anchors, spaced not more than 6 inches from ends and spacing indicated unless otherwise indicated.
   1. Provide mitered and welded units at corners.
   2. Provide open joints in shelf angles at expansion and control joints. Make open joint approximately 2 inches larger than expansion or control joint.

B. For cavity walls, provide vertical channel brackets to support angles from backup masonry and concrete.

C. Galvanize shelf angles located in exterior walls.

D. Furnish wedge-type concrete inserts, complete with fasteners, to attach shelf angles to cast-in-place concrete.

2.7 MISCELLANEOUS STEEL TRIM

A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.

B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.
   1. Provide with integrally welded steel strap anchors for embedding in concrete or masonry construction.

C. Galvanize exterior miscellaneous steel trim.

2.8 METAL BOLLARDS

A. Fabricate metal bollards from Schedule 40 steel pipe.
   1. Cap bollards with 1/4-inch thick steel plate.
   2. Where bollards are indicated to receive controls for door operators, provide cutouts for controls and holes for wire.
   3. Where bollards are indicated to receive light fixtures, provide cutouts for fixtures and holes for wire.

B. Fabricate sleeves for bollard anchorage from steel pipe with 1/4-inch- thick steel plate welded to bottom of sleeve. Make sleeves not less than 8 inches deep and 3/4 inch larger than OD of bollard.

C. Galvanize bollards.

2.9 LOOSE BEARING AND LEVELING PLATES

A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.

2.10 STEEL WELD PLATES AND ANGLES

A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with no fewer than two integrally welded steel strap anchors for embedding in concrete.

2.11 FINISHES, GENERAL

A. Finish metal fabrications after assembly.

B. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.12 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.
   1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.

B. Preparation for Shop Priming Galvanized Items: After galvanizing, thoroughly clean members of grease, dirt, oil, flux, and other foreign matter, and treat with metallic phosphate process.

C. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.
   1. Shop prime with universal shop primer.

D. Preparation for Shop Priming: Prepare surfaces to comply with SSPC-SP 3, "Power Tool Cleaning."

E. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.
   1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Field Welding: Comply with the following requirements:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

C. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

D. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

E. Corrosion Protection: Coat concealed surfaces of aluminum that come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

B. Anchor supports for overhead doors and overhead grilles securely to, and rigidly brace from, building structure.

3.3 INSTALLING METAL BOLLARDS

A. Fill metal-capped bollards solidly with concrete and allow concrete to cure seven days before installing.

B. Anchor bollards in concrete with pipe sleeves preset and anchored into. Fill annular space around bollard solidly with nonshrink grout; mixed and placed to comply with grout manufacturer's written instructions. Slope grout up approximately 1/8 inch toward bollard.

C. Anchor bollards in place with concrete footings. Center and align bollards in holes 3 inches above bottom of excavation. Place concrete and vibrate or tamp for consolidation. Support and brace bollards in position until concrete has cured.

3.4 INSTALLING BEARING AND LEVELING PLATES

A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.

B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with nonshrink grout. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.5 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
   1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.

END OF SECTION 05 5000

SECTION 05 5100
METAL STAIRS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Stairs with grating treads.

B. Structural steel stair framing and supports.

C. Handrails and guards.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. AISC 201 - AISC Certification Program for Structural Steel Fabricators, Standard for Steel Building Structures; 2006.

B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2022.

D. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

E. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

F. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2023.

G. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2021.

H. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength; 2023.

I. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.

J. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2021.

K. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2023).

L. NAAMM AMP 510 - Metal Stairs Manual; 1992.

M. NAAMM MBG 531 - Metal Bar Grating Manual; 2017.

N. NAAMM MBG 532 - Heavy Duty Metal Bar Grating Manual; 2019.

O. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

1.04 SUBMITTALS

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

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories.
   1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

C. Design Data: As required by authorities having jurisdiction.

D. 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.

E. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is certified under AISC 201.

F. Delegated-Design Submittal: For structural-steel connections indicated to comply with design loads, include analysis data signed and sealed by the qualified professional engineer responsible

for their preparation.

1.05 QUALITY ASSURANCE

A. 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.

B. Fabricator Qualifications:
   1. A qualified steel fabricator that is certified by the American Institute for Steel Construction (AISC) under AISC 201.

PART 2 PRODUCTS

2.01 METAL STAIRS - GENERAL

A. Metal Stairs: Provide stairs of the design specified, complete with landing platforms, vertical and horizontal supports, railings, and guards, fabricated accurately for anchorage to each other and to building structure.
   1. Regulatory Requirements: Provide stairs and railings that comply with most stringent requirements of local, state, and federal regulations; where requirements of Contract Documents exceed those of regulations, comply with Contract Documents.
   2. Handrails: Comply with applicable accessibility requirements of ADA Standards.
   3. Dimensions: As indicated on drawings and verified in the field.
   4. Shop assemble components; disassemble into largest practical sections suitable for transport and access to site.
   5. No sharp or rough areas on exposed travel surfaces and surfaces accessible to touch.
   6. Separate dissimilar metals using paint or permanent tape.

B. Metal Jointing and Finish Quality Levels:
   1. Service: Exposed joints tight with face surfaces aligned; underside of stair not covered by soffit is not considered exposed to view.
      a. Welded Joints: Welded on back side wherever possible.
      b. Welds Exposed to View: Ground smooth; not required to be flush.
      c. Bolts Exposed to View: Tamperproof; Countersunk flat or oval head bolts; no exposed nuts or screw threads.
      d. Metal Surfaces to be Painted: Sanded smooth, suitable for satin or matte finish.

C. Fasteners: Tamperproof; of same material or compatible with materials being fastened; type consistent with design and specified quality level.

D. Anchors and Related Components: Same material and finish as item to be anchored, except where specifically indicated otherwise; provide all anchors and fasteners required.

2.02 METAL STAIRS WITH GRATING TREADS

A. Jointing and Finish Quality Level: Service, as defined above.

B. Risers: Open.

C. Treads: Galvanized Steel bar grating.
   1. Grating Type: Welded.
   2. Bearing Bar Depth: 3/4 inch, minimum.
   3. Top Surface: Standard.
   4. Nosing: Checkered plate.
   5. Nosing Width: 1-1/4 inch, minimum.
   6. Anchorage to Stringers: End plates welded to stringers, bolted to grates.

D. Stringers: HSS as indicated on drawings.
   1. Stringer Depth: 12 inches.
   2. End Closure: Sheet steel, 14 gauge, 0.075 inch minimum; welded across ends.

E. Landings: Same construction as treads, supported and reinforced as required to achieve design load capacity.

F. Railings: Steel pipe railings.

G. Finish: Galvanized after fabrication.

2.03 HANDRAILS AND GUARDS

A. Rails: Round pipe or tube rails unless otherwise indicated.
   1. Outside Diameter: 1-1/4 inch, minimum, to 1-1/2 inches, maximum.

B. Guards:
   1. Top Rails: Round pipe or tube rails unless otherwise indicated.
      a. Outside Diameter: 1-1/4 inch, minimum, to 1-1/2 inches, maximum.
   2. Infill at Pipe Railings: Pipe or tube rails sloped parallel to stair.
      a. Outside Diameter: 1 1/2 inch.
      b. Material: Steel pipe or tube, round.
      c. Vertical Spacing: As indicated on drawings.
      d. Jointing: Welded and ground smooth and flush.
   3. End and Intermediate Posts: Same material and size as top rails.
      a. Horizontal Spacing: As indicated on drawings.
      b. Mounting: Welded to top surface of stringer.

2.04 MATERIALS

A. Steel Sections: ASTM A36/A36M, galvanized finish.

B. Steel Tubing: ASTM A500/A500M or ASTM A501/A501M structural tubing, round and shapes as indicated, galvanized finish.

C. Pipe: ASTM A53/A53M Grade B Schedule 40, galvanized finish.

D. Gratings: Bar gratings that comply with NAAMM MBG 531 or NAAMM MBG 532, whichever applies based on bar sizes, galvanized finish.

2.05 ACCESSORIES

A. Steel Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, and galvanized to ASTM A153/A153M where connecting galvanized components.

B. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

C. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20 Type I - Inorganic, and comply with VOC limitations of authorities having jurisdiction.

2.06 SHOP FINISHING

A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

B. Galvanizing: Hot-dip galvanize to minimum requirements of ASTM A123/A123M.
   1. Touch up abraded areas after fabrication using specified touch-up primer for galvanized surfaces.

2.07 PERFORMANCE REQUIREMENTS

A. Connections: Provide details of simple shear connections required by the Contract Documents to be selected or completed by structural-steel fabricator, including comprehensive engineering analysis by a qualified professional engineer, to withstand loads indicated and comply with other information and restrictions indicated.
   1. Select and complete connections using schematic details indicated and AISC 360.
   2. Use Allowable Stress Design; data are given at service-load level unless noted otherwise

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. When field welding is required, clean and strip primed steel items to bare metal.

3.03 INSTALLATION

A. Install components plumb and level, accurately fitted, free from distortion or defects.

B. Provide anchors, plates, angles, hangers, and struts required for connecting stairs to structure.

C. Allow for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

D. Provide welded field joints where specifically indicated on drawings. Perform field welding in accordance with AWS D1.1/D1.1M.

E. Other field joints may be either welded or bolted provided the result complies with the limitations specified for jointing quality levels.

F. Obtain approval prior to site cutting or creating adjustments not scheduled.

G. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

END OF SECTION

SECTION 06 1000
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preservative treated wood materials.

B. Fire retardant treated wood materials.

C. Communications and electrical room mounting boards.

D. Concealed wood blocking, nailers, and supports.

1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete: Setting anchors in concrete.

1.03 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

B. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2017.

C. ASTM D2898 - Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing; 2010 (Reapproved 2017).

D. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.

E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023c.

F. AWPA U1 - Use Category System: User Specification for Treated Wood; 2023.

G. PS 1 - Structural Plywood; 2023.

H. PS 2 - Performance Standard for Wood Structural Panels; 2018.

I. PS 20 - American Softwood Lumber Standard; 2021.

J. SPIB (GR) - Standard Grading Rules; 2021.

1.04 SUBMITTALS

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

B. Product Data: Provide technical data on wood preservative materials.

C. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

1.05 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, and installation.

1.06 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Correct defective work within a two-year period commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. Species: Douglas Fir-Larch, unless otherwise indicated.

2. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
3. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at www.alsc.org, and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Sizes: Nominal sizes as indicated on drawings, S4S.

B. Moisture Content: S-dry or MC19.

C. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
1. Lumber: S4S, No. 2 or Standard Grade.
2. Boards: Standard or No. 3.

2.03 CONSTRUCTION PANELS

A. Wall Sheathing: PS 2 type.
1. Bond Classification: Exterior.
2. Grade: Sheathing.
3. Span Rating: 24.
4. Performance Category: 5/16 PERF CAT.
5. Edge Profile: Square edge.

B. Wall Sheathing: Glass mat faced gypsum, ASTM C1177/C1177M, 5/8 inch Type X fire resistant.
1. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
2. Edges: Square.
3. Products:
a. USG Corporation; Securock Brand UltraLight Glass-Mat Sheathing Firecode USGX 5/8 in. (15.9 mm): www.usg.com/#sle.
b. USG Corporation; Securock Brand Glass-Mat Sheathing Firecode SHX 5/8 in. (15.9 mm): www.usg.com/#sle.
c. Substitutions: See Section 01 6000 - Product Requirements.

C. 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.

2.04 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.

2.05 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA 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 AWPA standards.

B. Fire Retardant Treatment:
1. Products:
a. Lonza Group: www.wolmanizedwood.com/#sle.
b. Hoover Treated Wood Products, Inc: www.frtw.com.
c. Substitutions: See Section 01 6000 - Product Requirements.

2. Exterior Type: AWPA 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.

C. Preservative Treatment:
   1. Preservative Pressure Treatment of Lumber Above Grade: AWPA 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.
      d. Treat lumber less than 18 inches above grade.

PART 3 EXECUTION

3.01 PREPARATION

A. Coordinate installation of rough carpentry members specified in other sections.

3.02 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.

3.03 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.

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.

3.04 INSTALLATION OF CONSTRUCTION PANELS

A. Subflooring: Glue and nail to framing; staples are not permitted.

B. Roof Sheathing/ Plywood: Secure panels with long dimension perpendicular to framing members, with ends staggered and over firm bearing.
   1. Nail panels to framing; staples are not permitted.

C. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails, screws, or staples.

D. 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.

3.05 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.

B. Surface Flatness of Floor: 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

C. Variation from Plane, Other than Floors: 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.06 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

3.07 CLEANING

A. Waste Disposal: See Section 01 7419 - Construction Waste Management and Disposal.
   1. Comply with applicable regulations.

B. Do not leave wood, shavings, sawdust, etc. on the ground or buried in fill.

C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

SECTION 06 4100
ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Specially fabricated cabinet units.

B. Countertops.

C. Hardware.

D. Preparation for installing utilities.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Support framing, grounds, and concealed blocking.

B. Section 12 3600 - Countertops.

1.03 REFERENCE STANDARDS

A. AWI (QCP) - Quality Certification Program; Current Edition.

B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

C. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

D. BHMA A156.9 - Cabinet Hardware; 2020.

E. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

1.04 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.

1.05 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.
   2. Provide information as required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
   3. Include certification program label.

C. Product Data: Provide data for hardware accessories.

D. Samples: Submit actual sample items of proposed surface materials, demonstrating hardware design, quality, and finish.

1.06 QUALITY ASSURANCE

A. 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.
   2. Replace, repair, or rework all work for which certification is refused.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Protect units from moisture damage.

1.08 FIELD CONDITIONS

A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

PART 2 PRODUCTS

2.01 CABINETS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS), unless noted otherwise.

B. Plastic Laminate Faced Cabinets: Custom grade.

C. Cabinets:
   1. Finish - Exposed Exterior Surfaces: Decorative laminate.
   2. Finish - Exposed Interior Surfaces: Decorative laminate.
   3. Finish - Semi-Exposed Surfaces: Thermoset decorative panels.
      a. Edges of Thermoset Decorative Panel Shelves: PVC or polyester edge banding.
      b. For semi-exposed backs of panels with exposed plastic laminate surfaces, provide surface of high-pressure decorative laminate, NEMA LD 3 Grade VGS.
   4. Door and Drawer Front Edge Profiles: Square edge with thin applied band.
   5. Casework Construction Type: Type A - Frameless.
   6. Interface Style for Cabinet and Door: Style 1 - Overlay; flush overlay.
   7. Layout for Cabinet and Door Fronts: Flush panel.
      a. Custom Grade: Doors, drawer fronts and false fronts wood grain to run and match vertically within each cabinet unit.
   8. Adjustable Shelf Loading: 50 psf.
      a. Deflection: L/144.
   9. Cabinet Style: Flush overlay.
   10. Cabinet Doors and Drawer Fronts: Flush style.
   11. Drawer Construction Technique: Dovetail joints.

2.02 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

B. Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.
   1. Wood moisture content: 5 to 10 percent.

C. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.
   1. Particleboard: ANSI A208.1, Grade M-2.
   2. Softwood Plywood: DOC PS 1, medium-density overlay.
   3. Thermoset Decorative Panels: Particleboard or medium-density fiberboard finished with thermallyl fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD 3, Grade VGJL, for test methods 3.3, 3.4, 3.6, 3.8 and 3.10.

2.03 LAMINATE MATERIALS

A. Manufacturers:
   1. Formica Corporation; ____: www.formica.com/#sle.
   2. Wilsonart LLC; ____: www.wilsonart.com/#sle.
   3. Nevamar; www.nevamar.com.
   4. Substitutions: See Section 01 6000 - Product Requirements.

B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.

C. Provide specific types as follows:
   1. Horizontal Surfaces: HGS, 0.048 inch nominal thickness, through color, color and finish as selected by Architect from Manufacturer's standard line..
   2. Vertical Surfaces: VGS, 0.028 inch nominal thickness, through color, color and finish as selected by Architect from Manufacturer's standard line..
   3. Cabinet Liner: CLS, 0.020 inch nominal thickness, through color, color and finish as selected by Architect from Manufacturer's standard line..
   4. Edges: PVC edge banding, 1mm thick PVC on Cabinet, 3mm PVC on all Doors and Drawer fronts, matchint laminate in color, pattern and finish.

2.04 COUNTERTOPS

A. Countertops: See Section 12 3600.

2.05 ACCESSORIES

A. Adhesive: Type recommended by fabricator to suit application.

B. Plastic Edge Banding: Extruded PVC, convex shaped; smooth finish; self locking serrated tongue; of width to match component thickness.
   1. Color: As selected by Architect/Engineer from manufacturer's standard range.
   2. Use at all exposed plywood edges.
   3. Use at all exposed shelf edges.

C. Fasteners: Size and type to suit application.

D. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized finish in concealed locations and stainless steel finish in exposed locations.

E. Concealed Joint Fasteners: Threaded steel.

2.06 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 coordinated self rests, satin chrome finish, for nominal 1 inch spacing adjustments.

C. Drawer and Door Pulls: "U" shaped wire pull, steel with satin finish, 4 inch centers.

D. Drawer Slides:
   1. Type: Full extension.
   2. Static Load Capacity: Extra Heavy Duty grade.
   3. Mounting: Bottom mounted.
   4. Stops: Integral type.
   5. Features: Provide self closing/stay closed type.

E. Hinges: European style concealed self-closing type, steel with satin finish.

2.07 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.

E. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Seal cut edges.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify location and sizes of utility rough-in associated with work of this section.

3.02 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. Use fixture attachments in concealed locations for wall mounted components.

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.

3.03 ADJUSTING

A. Test installed work for rigidity and ability to support loads.

B. Adjust moving or operating parts to function smoothly and correctly.

3.04 CLEANING

A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION

SECTION 07 2100
THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Board insulation at perimeter foundation wall, underside of floor slabs, over roof deck, and at integral precast locations, and at unconditioned interior spaces.

B. Batt insulation and vapor retarder in exterior wall, ceiling, and roof construction.

C. Batt insulation for filling crevices in exterior wall and roof.

1.02 RELATED REQUIREMENTS

A. Section 07 2600 - Vapor Retarders: Separate vapor retarder materials.

B. Section 07 2500 - Weather Barriers: Separate air barrier and vapor retarder materials.

1.03 REFERENCE STANDARDS

A. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2023.

B. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2023.

C. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2023a.

D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023c.

E. ASTM E136 - Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 °C; 2022.

1.04 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. ABAA Field Quality Control Submittals: Submit third-party reports of testing and inspection required by ABAA QAP.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

F. ABAA Manufacturer Qualification: Submit documentation of current evaluation of proposed manufacturer and materials.

G. ABAA Installer Qualification: Submit documentation of current contractor accreditation and current installer certification. Keep copies of contractor accreditation and installer certification on project site during and after installation. Present on-site documentation upon request.

1.05 QUALITY ASSURANCE

A. Air Barrier Association of America (ABAA) Quality Assurance Program (QAP); www.airbarrier.org/#sle:
   1. Installer Qualification: Use accredited contractors, certified installers, evaluated materials, and third-party field quality control audit.
   2. Manufacturer Qualification: Use evaluated materials from a single manufacturer regularly engaged in air barrier material manufacture. Use secondary materials approved in writing by primary material manufacturer.

1.06 FIELD CONDITIONS

A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

B. Protect foam-plastic board insulation as follows:
   1. Do not expose to sunlight except to necessary extent for period of installation and concealment.
   2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project site until just before installation time.
   3. Quickly complete installation and concealment of foam-plastic board insulation in each area of construction.

PART 2 PRODUCTS

2.01 APPLICATIONS

A. Insulation Under Concrete Slabs: Extruded polystyrene (XPS)-1 board.

B. Insulation at Perimeter of Foundation: Extruded polystyrene (XPS) -1 board.

C. Insulation Inside Prefabricated Concrete Wall Panels: Extruded polystyrene (XPS)-2 board.

D. Insulation Over Metal Stud Framed Walls & CMU, at unconditioned, interior spaces: Extruded polystyrene (XPS)-3 board.

E. Insulation Over Roof Deck: Polyisocyanurate board.

F. Insulation over horizontal metal stud framing at dryer chase: Polyisocyanurate board.

2.02 FOAM BOARD INSULATION MATERIALS

A. Extruded Polystyrene (XPS)-1 Board Insulation: Comply with ASTM C578 with either natural skin or cut cell surfaces.
   1. Type and Compressive Resistance: Type VI, 40 psi (276 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; Styrofoam Brand Highload 40: building.dupont.com/#sle.
      b. Kingspan Insulation LLC; GreenGuard XPS Type VI, 40 psi: www.kingspan.com/#sle.
      c. Owens Corning Corporation; FOAMULAR NGX Type 400 Next Generation Extruded: www.ocbuildingspec.com/#sle.
      d. Substitutions: See Section 01 6000 - Product Requirements.

B. Polyisocyanurate (ISO) Board Insulation: Rigid cellular foam, comply 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. Board Size: 48 inch by 96 inch.
   3. Thickness & Total R-Value: 2 layers for a min. R-30
   4. Tapered Board for crickets: Slope at 1/4" min. for positive drainage to scuppers; minimum thickness 1/4 inch; fabricate of fewest layers possible.

5. Board Edges: Square.
6. Products:
   a. Atlas Roofing Corporation; ACFoam-II Polyiso Roof Insulation: www.atlasroofing.com/#sle.
   b. DuPont de Nemours, Inc; Thermax Brand _____: building.dupont.com/#sle.
   c. GAF; EnergyGuard Polyiso Insulation: www.gaf.com/#sle.
   d. Substitutions: See Section 01 6000 - Product Requirements.

2.03 MINERAL FIBER BLANKET INSULATION MATERIALS

A. Flexible Glass Fiber Blanket Thermal Insulation: Preformed insulation, complying with ASTM C665; friction fit.
   1. Flame Spread Index: 75 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.
   4. Formaldehyde Content: Zero.
   5. Thickness: 6 1/4 inch.

B. Mineral Wool Blanket Thermal Insulation: Flexible or semi-rigid preformed insulation, complying with ASTM C665.
   1. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
   2. Thickness: 2" inch.
   3. Products:
      a. Johns Manville; MinWool Sound Attenuation Fire Batts: www.jm.com/#sle.
      b. Knauf Insulation; EcoBatt Insulation: www.knaufinsulation.com/#sle.
      c. ROCKWOOL; COMFORTBATT: www.rockwool.com/#sle.
      d. Thermafiber, Inc; SAFB: www.thermafiber.com/#sle.
      e. Substitutions: See Section 01 6000 - Product Requirements.

2.04 ACCESSORIES

A. Sheet Vapor Retarder: See Section 07 2600.

B. Tape: Reinforced polyethylene film with acrylic pressure sensitive adhesive.
   1. Application: Sealing of interior circular penetrations, such as pipes or cables.
   2. Width: Are required for application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.

B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 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.

B. Install boards horizontally on foundation perimeter.
   1. Install in running bond pattern.
   2. Butt edges and ends tightly to adjacent boards and to protrusions.

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.

3.03 BOARD INSTALLATION AT CMU & EXTERIOR SHEATHING WALLS

A. Adhere 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.

B. Install boards horizontally on walls.

C. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.04 BOARD INSTALLATION UNDER CONCRETE SLABS

A. Place insulation under slabs on grade after base for slab has been compacted.

B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

C. Prevent insulation from being displaced or damaged while placing vapor retarder and placing slab.

3.05 BOARD INSTALLATION OVER LOW SLOPE ROOF DECK

A. Board Installation Over Roof Deck, General:
1. See applicable roofing specification section for specific board installation requirements.
2. Ensure vapor retarder is clean and dry, continuous, and ready for application of roofing system.
3. Fasten insulation to deck in accordance with roofing manufacturer's written instructions and applicable Factory Mutual requirements.
4. Do not apply more insulation than can be covered with roofing on the same day.

3.06 BATT INSTALLATION

A. Install insulation and vapor retarder in accordance with manufacturer's instructions.

B. Install in exterior wall and roof 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.

3.07 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

3.08 PROTECTION

A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION

SECTION 07 2500
WEATHER BARRIERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Vapor Retarders: Materials to make exterior walls, joints between exterior walls and roof, and joints around frames of openings in exterior walls water vapor resistant and air tight.

B. Air Barriers: Materials that form a system to stop passage of air through exterior walls, joints between exterior walls and roof, and joints around frames of openings in exterior walls.

1.02 RELATED REQUIREMENTS

A. Section 07 2100 - Thermal Insulation: Vapor retarder installed in conjunction with board insulation.

1.03 DEFINITIONS

A. Weather Barriers: Assemblies that form either water-resistive barriers, air barriers, or vapor retarders.

B. Air Barrier: Air tight barrier made of material that is relatively air impermeable but water vapor permeable, both to the degree specified, with sealed seams and with sealed joints to adjacent surfaces. Note: For the purposes of this specification, vapor impermeable air barriers are classified as vapor retarders.

C. Vapor Retarder: Air tight barrier made of material that is relatively water vapor impermeable, to the degree specified, with sealed seams and with sealed joints to adjacent surfaces.
   1. Water Vapor Permeance: For purposes of conversion, 57.2 ng/(Pa s sq m) = 1 perm.

1.04 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 E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2022a, with Editorial Revision (2023).

C. ICC-ES AC148 - Acceptance Criteria for Flexible Flashing Materials; 2017, with Editorial Revision (2021).

D. ICC-ES AC212 - Acceptance Criteria for Water-Resistive Coatings Used as Water-Resistive Barriers over Exterior Sheathing; 2015, with Editorial Revision (2020).

1.05 SUBMITTALS

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

B. Product Data: Provide data on material characteristics.

C. Shop Drawings: Provide drawings of special joint conditions.

D. Manufacturer's Installation Instructions: Indicate preparation, installation methods, and storage and handling criteria.

1.06 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by materials manufacturers before, during, and after installation.

1.07 WARRANTY

A. Manufacturer's Special Warranty: Weather barrier and accessories are free of defects at time of delivery and are manufactured to meet manufacturer's published physical properties and material specifications.

B. Warranty Period: Five years from date of substantial completion.

PART 2 PRODUCTS

2.01 WEATHER BARRIER ASSEMBLIES

A. Exterior Vapor Retarder / Air Barrier:
   1. On outside surface of sheathing & CMU use vapor retarder coating.

2.02 [AVB] VAPOR RETARDER MATERIALS (AIR BARRIER AND WATER-RESISTIVE)

A. Vapor Retarder Coating: Liquid applied, resilient, UV-resistant coating and associated joint treatment.
   1. LowTemperature Crack Bridging: ASTM C1305, no cracking after 10 cycles at -15°F (-26°C)
   2. Elongation: ASTM D412, primary air barrier and vapor barrier material, > 500%.
   3. Tensile Strength: ASTM D412, > 200 psi (1378 kPa).
   4. Dry Film Thickness: 40 mils (0.040 inch), minimum.
   5. Water Vapor Permeance: 0.1 perm, maximum, when tested in accordance with ASTM E96/E96M.
   6. Air Leakage: Less than 0.2 L/m2s @ 75 Pa
   7. VOC Content: Less than 100 g per L when tested in accordance with 40 CFR 59, Subpart D (EPA Method 24).
   8. Resistance to Fungal Growth: No growth when tested according to ASTM D5590.
   9. Code Acceptance: Comply with applicable requirements of ICC-ES AC212.
   10. Suitable for use on concrete, masonry, plywood and glass mat gypsum sheathing.
   11. Joint Preparation Treatment: Coating manufacturer's recommended method, either tape or reinforcing mesh saturated with coating material.
   12. Manufacturers:
      a. Basis of Design: Sto Corp; Sto VaporSeal (40 mil application): www.stocorp.com/#sle
         1) Rough Opening Treatments: StoGuard VaporSeal with StoGuard Fabric and StoGuard RedicornerTM: flexible waterproof air barrier membrane material with non-woven integrally reinforced cloth reinforcements
         2) Transition Membrane:
            (a) StoGuard Transition Membrane: flexible air barrier membrane for continuity at transitions: sheathing to foundation, dissimilar materials (CMU to frame wall), flashing shingle lap transitions, floor line deflection joints, masonry control joints, and through wall joints in masonry or frame construction.
            (b) StoGuard RapidFill: one component gun-applied air and moisture barrier membrane material for continuity at static transitions such as through wall penetrations such as pipes, electrical boxes, and scupper penetrations.
      b. Other approved manufacturers (dependant on meeting basis of design and specification criteria):
         1) BASF Corporation
         2) Grace Consruction & Packaging
         3) Henry Company
      c. Substitutions: See Section 01 6000 - Product Requirements.
   13. Joint Filler: As recommended by coating manufacturer and suitable to the substrate.

2.03 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. Primer, joint reinforcing strip, substrate-patching membrane, adhesive, and tape as recommended by material manufacturer.

C. Flexible Flashing: Self-adhering or mechanically attached flashing used for wall penetrations in accordance with ICC-ES AC148 requirements.

D. Thinners and Cleaners: As recommended by water-resistive barrier manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and conditions comply with requirements of this section.

3.02 PREPARATION

A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.

B. Clean and prime substrate surfaces to receive air/vapor barrier material in accordance with manufacturer's instructions.

3.03 INSTALLATION

A. Install materials in accordance with manufacturer's installation instructions.

B. Vapor Retarders: Install continuous air tight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.

C. Apply sealants and adhesives within recommended temperature range in accordance with manufacturer's installation instructions.

D. Coatings:
   1. Prepare substrate in accordance with coating manufacturer's installation instructions; treat joints in substrate and between dissimilar materials as indicated.
   2. Where exterior masonry veneer is being applied, install masonry anchors prior to placement of water-resistive barrier over masonry substrate; seal airtight around anchors.
   3. 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.
   4. Apply flashing to seal with adjacent construction and to bridge joints in coating substrate.

E. 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.

3.04 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.

3.05 PROTECTION

A. Do not leave materials exposed to weather longer than recommended by manufacturer.

B. Protect air barrier from contact with incompatible materials and sealants not approved by air-barrier manufacturer.

END OF SECTION

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SECTION 07 4213.19
INSULATED METAL WALL PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Factory-assembled metal panel system for walls, with trim, related flashings and accessory components.

1.02 REFERENCE STANDARDS

A. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process; 2023.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023c.

C. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

1.03 SUBMITTALS

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

B. Product Data: Provide manufacturer documentation on tested structural, thermal, and fire resistance capabilities of assembled panel.

C. Shop Drawings: Indicate dimensions, panel profile and layout, spans, joints, construction details, and methods of anchorage.

D. Samples: Submit one samples of panel, 6 x 6 inch in size illustrating finish color, sheen, and texture.

E. Design and Performance Data: Indicate panel profile and dimensions.

F. Manufacturer's Installation Instructions: Indicate special handling criteria.

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.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.

B. Store pre-finished material off ground with weather protection to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

C. Prevent contact with materials that could cause discoloration or staining.

1.05 FIELD CONDITIONS

A. Do not install panels when air temperature or relative humidity are outside manufacturer's limits.

1.06 WARRANTY

A. 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.

B. Special Warranty: Provide 2-year warranty covering water tightness and integrity of seals of metal plate wall panels. Complete forms in Owner's name and register with warrantor.

C. Installation Warranty for Building Rainscreen Assembly: Installer of exterior rainscreen assembly (including 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

2.01 MANUFACTURERS

A. Insulated Metal Wall Panels:
   1. ATAS International, Inc: www.atas.com/#sle.
   2. Centria, a Nucor Company: www.centria.com/#sle.
   3. Kingspan Insulated Panels: www.kingspan.com/#sle.
   4. Metl-Span, a Nucor Company; Basis of Design: LS-36: www.metlspan.com/#sle.
   5. MBCI: www.mbci.com/#sle.
   6. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PERFORMANCE / DESIGN CRITERIA

A. Metal Panel System: Factory-assembled metal panel system, with trim, related flashings and accessory components.
   1. Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.
   2. Accommodate tolerances of building structural framing.
   3. Provide continuity of thermal barrier at building enclosure elements; see Section 07 2100.
   4. Provide continuity of vapor retarder at building enclosure elements in conjunction with vapor retarder materials; see Section 07 2600.
   5. Provide continuity of air barrier seal at building enclosure elements in conjunction with air seal materials; see Section 07 2700.

B. Performance Requirements:
   1. Thermal Performance: Provide thermal resistance through entire system; U-value of .057, minimum.
   2. Structural Performance: Design and size to withstand all dead loads and wind loads caused by positive and negative wind pressure acting normal to plane of panel.
      a. Verify structural performance in accordance with ASTM E330/E330M, using test pressure 1.5 times design wind pressure, with 10 seconds duration of maximum load.
   3. Movement: Accommodate the movement caused by the following without damage to system, components, or deterioration of seals:
      a. Normal movement between system components.
      b. Seasonal temperature cycling.
      c. Deflection of structural support framing,

2.03 COMPONENTS

A. Wall Panels: Exterior and interior metal sheet skin, factory-assembled, with foamed in place insulation; exterior and interior sheet interlocking at edges, fitted with continuous gaskets.
   1. Panel Width: 36 inches.
   2. Profile: 1 1/4" high major ribs spaced 12" on cente; vertical panels.
   3. Panel Thickness: 2 inch.
   4. Exterior Sheet: Pre-finished aluminum-zinc alloy-coated steel, 22 gauge, 0.0299 inch minimum base metal thickness.
   5. Interior Sheet: Aluminum-zinc alloy-coated steel, pre-finished, 22 gauge, 0.0299 inch minimum base metal thickness.
   6. Panel Edge Profile: Offest double tongue-and-groove with extended metal shelf for positive face fastening.
   7. Fabricate panels in longest practicable lengths.
   8. Exterior Finish: Polyvinylidene fluoride (PVDF) coating; color as selected from manufacturer's standard range.
   9. Interior Finish: Polyvinylidene fluoride (PVDF) coating; color as selected from manufacturer's standard range.

B. Internal and External Corners: Same material, thickness, and finish as exterior sheets; factory-fabricated mitered to required angles in one continuous piece with minimum 18 inch returns.

C. Trim, Closure Pieces, Caps, Flashings, Fascias, and Infills: Same material , thickness and finish as exterior sheets; brake formed to required profiles; fabricated in longest practicable lengths.
   1. Exposed Fasteners: Not permitted.
   2. Profiles: To suit system.

2.04 MATERIALS

A. Precoated Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A792/A792M, Commercial Steel (CS) or Forming Steel (FS), with AZ55/AZM165 coating; continuous coil coated with acrylic primer coat, polyvinylidene fluoride (PVDF) top coat, and polyester washcoat for panel back.
   1. Color of Exposed Exterior Surfaces: As selected by Architect/Engineer from manufacturer's standard range.

B. Foamed-in-Place Insulation: Urethane type.
   1. Surface Burning Characteristics: Flame spread/smoke developed index of 25/450, maximum, when tested in accordance with ASTM E84.
   2. Heat Transfer Coefficient (U-factor): .057

C. Gaskets: Manufacturer's standard type suitable for use with panel system, permanently resilient; ultraviolet and ozone resistant; color as selected by Architect.

D. Panel Sealants: Manufacturer's standard type suitable for use with installation of panel system; non-staining, skinning, non-shrinking, non-sagging, ultra-violet and ozone resistant; color as selected by Architect.

2.05 ACCESSORIES

A. Concealed Sealants: Non-curing butyl sealant or tape sealant.

B. Subgirts: As required for system design.

C. Fasteners: Manufacturer's standard type to suit application; hot-dip galvanized steel with soft neoprene washers; provide with fastener cap same color as exterior panel.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install panel system on walls in accordance with manufacturer's instructions.

B. Protect panel surfaces in contact with cementitious materials with bituminous paint; allow paint to dry prior to installation.

C. Permanently fasten panel system to structural supports; aligned, level, and plumb, within specified tolerances.

D. Locate panel joints over supports.

E. Use concealed fasteners unless otherwise approved by Architect/Engineer.

F. Seal and place gaskets to prevent weather penetration. Maintain neat appearance.

3.02 TOLERANCES

A. Maximum Offset From True Alignment Between Adjacent Members Butting or In Line: 1/16 inch.

3.03 CLEANING

A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.

B. Remove site cuttings from finish surfaces.

C. Clean and wash prefinished surfaces with mild soap and water; rinse with clean water.

3.04 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION

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SECTION 07 5300
ELASTOMERIC MEMBRANE ROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Elastomeric roofing membrane, adhered conventional application.

B. Insulation, flat and tapered.

C. Vapor retarder.

D. Cover boards.

E. Roofing cant strips, stack boots, roofing expansion joints, and walkway pads.

1.02 RELATED REQUIREMENTS

A. Section 07 7100 - Roof Specialties: Prefabricated roofing expansion joint flashing.

1.03 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 C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2017.

C. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2023a.

D. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016 (Reapproved 2021).

E. ASTM D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers; 2000 (Reapproved 2020).

F. ASTM D746 - Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact; 2020.

G. ASTM D1929 - Standard Test Method for Determining Ignition Temperature of Plastics; 2023.

H. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015 (Reapproved 2021).

I. ASTM D4637/D4637M - Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane; 2015, with Editorial Revision (2022).

J. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023c.

K. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2022a, with Editorial Revision (2023).

L. ASTM E303 - Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester; 2022.

M. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces; 2011 (Reapproved 2019).

N. FM (AG) - FM Approval Guide; Current Edition.

O. FM DS 1-28 - Wind Design; 2015, with Editorial Revision (2022).

P. NRCA (RM) - The NRCA Roofing Manual; 2024.

Q. NRCA (WM) - The NRCA Waterproofing Manual; 2021.

R. SPRI RP-4 - Wind Design Standard for Ballasted Single-Ply Roofing Systems; 2022.

S. UL (DIR) - Online Certifications Directory; Current Edition.

T. UL (FRD) - Fire Resistance Directory; Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with installation of associated counterflashings installed under other sections.

B. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all affected installers; review preparation and installation procedures and coordination and scheduling necessary for related work.

1.05 SUBMITTALS

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

B. Product Data: Provide data indicating membrane materials, flashing materials, insulation, vapor retarder, surfacing, and fasteners.

C. Shop Drawings: Indicate joint or termination detail conditions and conditions of interface with other materials.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Manufacturer's Installation Instructions: Indicate membrane seaming precautions and perimeter conditions requiring special attention.

F. Manufacturer's Field Reports: Indicate procedures followed, ambient temperatures, humidity, wind velocity during application, and supplementary instructions given.

G. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is UL listed and FM Global approved for roofing system identical to that used for this Project.

B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original containers, dry and undamaged, with seals and labels intact.

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.

1.08 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

B. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

C. Schedule applications so that no partially completed sections of roof are left exposed at end of workday.

1.09 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Correct defective work within a two year period after Date of Substantial Completion.

C. Provide 25 year manufacturer's material warranty to cover failure to prevent penetration of water.

D. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.

1. Special warranty includes membrane roofing, base flashings, roof insulation, fasteners, cover boards, roofing accessories, and other components of roofing system.
2. Wind Speed Coverage: Damage due to winds up to 90 MPH.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Source Limitations: Obtain components including roof insulation and fasteners for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

B. EPDM Membrane Materials:
1. Carlisle Roofing Systems, Inc: www.carlisle-syntec.com/#sle.
2. Firestone Building Products, LLC; <>: www.firestonebpco.com.
3. Johns Manville: www.jm.com/#sle.
4. Mule-Hide Products Co, Inc; Standard EPDM: www.mulehide.com/#sle.
5. Versico Roofing Systems; VersiGard EPDM: www.versico.com/#sle.
6. Substitutions: See Section 01 6000 - Product Requirements.

C. Insulation:
1. Dow: www.dow.com/#sle.
2. GAF: www.gaf.com/#sle.
3. Owens Corning Corporation: www.owenscorning.com/#sle.
4. Versico Roofing Systems: www.versico.com/#sle.
5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 ROOFING

A. Elastomeric Membrane Roofing: One ply membrane, fully adhered over protection board.

B. Acceptable Insulation Types - Constant Thickness Application:
1. Minimum 2 layers of polyisocyanurate board.

C. Acceptable Insulation Types - Tapered Application: Any of types specified.
1. Tapered polyisocyanurate or extruded polystyrene board covered with uniform thickness composite board.

2.03 ROOFING MEMBRANE AND ASSOCIATED MATERIALS

A. Membrane: Ethylene-propylene-diene-terpolymer (EPDM); internally reinforced with fabric or scrim; complying with minimum properties of ASTM D4637/D4637M.
1. Thickness: 0.060 inch (60 mil).
2. Sheet Width: 76 inches, maximum; factory fabricate into widest possible sheets.
3. Color: White.

B. Seaming Materials: As recommended by membrane manufacturer.

C. Vapor Retarder: Non-bituminous, foil and fibrous mesh laminate, complying with requirements of fire rating classification; compatible with roofing and insulation materials.
1. Fire-retardant adhesive.
2. Vapor Permeability: 0.06 perm inch, measured in accordance with ASTM E96/E96M.
3. Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.

D. Flexible Flashing Material: Same material as membrane.
1. Thickness: 60 mil.
2. Tensile Strength: 1,200 psi.
3. Elasticity: 50 percent with full recovery without set.
4. Color: White.

2.04 COVER BOARDS

A. Cover Boards: Glass-mat faced gypsum panels complying with ASTM C1177/C1177M.
1. Thickness: 1/2 inch, fire-resistant.

2. FM classified for Very Severe Hail (VSH) in approved single ply membrane assemblies.
3. Products:
   a. Georgia-Pacific; DensDeck StormX Roof Boards with EONIC Technology: www.densdeck.com/#sle.
   b. Substitutions: See Section 01 6000 - Product Requirements.

2.05 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 2 - 20 psi (138 kPa), minimum.
         3) Thermal Resistance, R-value: At 1-1/2 inches thick; Class 1, Grades 1-2-3 - 8.4 (1.48) at 75 degrees F.
   2. Board Size: 48 by 96 inches.
   3. Tapered Board: Slope as indicated; minimum thickness 1.5 inch; fabricate of fewest layers possible.
   4. Board Edges: Square.
   5. Products:
      a. Dow Chemical Company: www.dow.com/#sle.
      b. GAF; EnergyGuard Polyiso Insulation: www.gaf.com/#sle.
      c. Mule-Hide Products Co, Inc; Poly ISO Flat: www.mulehide.com/#sle.
      d. Versico Roofing Systems; SecurShield Insulation: www.versico.com/#sle.
      e. Substitutions: See Section 01 6000 - Product Requirements.

2.06 ACCESSORIES

A. Prefabricated Roofing Expansion Joint Flashing: See Section 07 7100.

B. Stack Boots: Prefabricated flexible boot and collar for pipe stacks through membrane; same material as membrane.

C. Cant and Edge Strips: Wood fiberboard, compatible with roofing materials ; cants formed to 45 degree angle.

D. Insulation Joint Tape: Glass fiber reinforced type as recommended by insulation manufacturer, compatible with roofing materials; 6 inches wide; self adhering.

E. Insulation Fasteners: Appropriate for purpose intended.
   1. Length as required for thickness of insulation material and penetration of deck substrate, with metal washers.

F. Membrane Adhesive: As recommended by membrane manufacturer.

G. Insulation Adhesive: As recommended by insulation manufacturer.

H. Walkway Pads: Suitable for maintenance traffic, contrasting color or otherwise visually distinctive from roof membrane.
   1. Composition: Roofing membrane manufacturer's standard.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and site conditions are ready to receive work.

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.

3.02 INSULATION - UNDER MEMBRANE

A. Install vapor retarder to deck surface with adhesive in accordance with manufacturer's instructions.
   1. Extend vapor retarder under cant strips and blocking to deck edge.
   2. Install flexible flashing from vapor retarder to air seal material of wall construction, lap and seal to provide continuity of the air barrier plane.

B. Ensure vapor retarder is clean and dry, continuous, and ready for application of insulation.

C. Attachment of Insulation: Embed each layer of insulation in adhesive in full contact, in accordance with roofing and insulation manufacturers' instructions.

D. Cover Boards: Mechanically fasten cover boards in accordance with roofing manufacturer's instructions and FM (AG) Factory Mutual requirements.

E. Lay subsequent layers of insulation with joints staggered minimum 6 inches from joints of preceding layer.

F. Place tapered insulation to the required slope pattern in accordance with manufacturer's instructions.

G. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.

H. Tape joints of insulation in accordance with roofing and insulation manufacturers' instructions.

I. Do not apply more insulation than can be covered with membrane in same day.

3.03 INSTALLATION - MEMBRANE

A. Install elastomeric membrane roofing system in accordance with manufacturer's recommendations and NRCA (WM) applicable requirements.

B. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.

C. Shingle joints on sloped substrate in direction of drainage.

D. Fully Adhered Application: Apply adhesive to substrate at rate oas recommended by manufacturer. Fully embed membrane in adhesive except in areas directly over or within 3 inches (75 mm) of expansion joints. Fully adhere one roll before proceeding to adjacent rolls.
   1. Comply with requirements for SPRI ES-1.

E. Overlap edges and ends and seal seams by contact adhesive, minimum 3 inches. Seal permanently waterproof. Apply uniform bead of sealant to joint edge.

F. At intersections with vertical surfaces:
   1. Extend membrane over cant strips and up a minimum of 6 inches onto vertical surfaces.
   2. Fully adhere flexible flashing over membrane and up to lap over top of parapet wall.

G. Around roof penetrations, seal flanges and flashings with flexible flashing.

H. Install roofing expansion joints where indicated. Make joints watertight.
   1. Install prefabricated joint components in accordance with manufacturer's instructions.

I. Coordinate installation of roof drains and sumps and related flashings.

J. Coordinate installation of associated counterflashings installed under other sections.

3.04 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Owner will provide testing services, and Contractor to provide temporary construction and materials for testing in accordance with requirements.

C. Require site attendance of roofing and insulation material manufacturers regularly during installation of the Work.

3.05 CLEANING

A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.

B. See Section 01 7419 - Construction Waste Management and Disposal for additional requirements.

C. Remove bituminous markings from finished surfaces.

D. 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.

E. Repair or replace defaced or damaged finishes caused by work of this section.

3.06 PROTECTION

A. Protect installed roofing and flashings from construction operations.

B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

3.07 ROOFING INSTALLER'S WARRANTY

A. WHEREAS _____ of _____, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:
   1. Owner: Clarinda Correctional Facility.
   2. Address: 2000 N 16th St, Clarinda, IA 51632.
   3. Building Name/Type: Clarinda Correctional Facility - Kitchen & Laundry Addition .
   4. Address: 2000 N 16th St, Clarinda, IA 51632.
   5. Area of Work: _____.
   6. Acceptance Date: _____.
   7. Warranty Period: 25 year manufacturer warranty and 2 year installer warranty.
   8. Expiration Date: _____.

B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.

D. This Warranty is made subject to the following terms and conditions:
   1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:
      a. lightning;
      b. Insert required wind speed in first subparagraph below.
      c. peak gust wind speed exceeding 90 MPH;
      d. fire;
      e. failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
      f. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
      g. vapor condensation on bottom of roofing; and
      h. activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.
   2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
   3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.

4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.
5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.
6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's Trade Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this _____ day of _____, _____.
   1. Authorized Signature: _____.
   2. Name: _____.
   3. Title: _____.

END OF SECTION

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SECTION 07 6200
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabricated sheet metal items, including flashings.

B. Sealants for joints within sheet metal fabrications.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

B. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

D. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2023.

E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

F. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2017 (Reapproved 2023).

G. ASTM D4479/D4479M - Standard Specification for Asphalt Roof Coatings - Asbestos-Free; 2007 (Reapproved 2018).

H. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2018).

I. CDA A4050 - Copper in Architecture - Handbook; current edition.

J. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.04 SUBMITTALS

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

B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

C. Samples: Submit two samples 2 by 3 inch minimum in size illustrating metal finish colors for final selection.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.

B. Fabricator and Installer Qualifications: Company specializing in sheet metal work with five years of documented experience.

1.06 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

2.01 MANUFACTURERS

2.02 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. Silicone Modified Polyester Coating: Pigmented organic powder coating, AAMA 2603; baked enamel finish system.
   2. Polyvinylidene Fluoride (PVDF) Coating: Superior performing organic powder coating, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system.
   3. Color: To match approved sample.

B. Stainless Steel: ASTM A666, Type 304 alloy, soft temper, 28 gauge, 0.0156 inch thick; smooth No. 4 - Brushed finish.

2.03 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.

2.04 ACCESSORIES

A. Fasteners: Galvanized steel, with soft neoprene washers.

B. Underlayment: ASTM D226/D226M, organic roofing felt, Type II (No. 30).

C. Primer: Zinc chromate type.

D. Protective Backing Paint: Asphaltic mastic, ASTM D4479 Type I.

E. Concealed Sealants: Non-curing butyl sealant.

F. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.

G. Asphalt Roof Cement: ASTM D4586/D4586M, Type I, asbestos-free.

PART 3 EXECUTION

3.01 PREPARATION

A. Install starter and edge strips, and cleats before starting installation.

B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch.

3.02 INSTALLATION

A. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted..

B. Apply plastic cement compound between metal flashings and felt flashings.

C. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.

D. Seal metal joints watertight.

E. Secure gutters and downspouts in place with concealed fasteners.

F. Slope gutters 1/4 inch per 10 feet, minimum.

G. Connect downspouts to downspout boots, and seal connection watertight where indicated.

H. Set splash pads under downspouts where indicated.

END OF SECTION

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SECTION 07 7100
ROOF SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Manufactured roof specialties, including copings.

B. Roof expansion joint covers.

1.02 REFERENCE STANDARDS

A. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

B. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

C. ANSI/SPRI/FM 4435/ES-1 - Test Standard for Edge Systems Used with Low Slope Roofing Systems; 2022.

D. NRCA (RM) - The NRCA Roofing Manual; 2024.

1.03 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.

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.

1.04 CLOSEOUT SUBMITTALS

A. Maintenance Data.

B. Executed Manfucturer's Warranties.

1.05 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Manufacturer’s Standard Warranty: Warranted materials shall be free of defects in material and workmanship for five years after shipment. If, after inspection, the manufacturer agrees that materials are defective, the manufacturer shall at their option repair or replace them.

C. Manufacturer's Special Warranty: Warranty shall guarantee that a standard size roof edge system, when installed per manufacturer’s instructions, will not blow off, leak, or cause membrane failure, even in wind conditions up to 110 mph, or the manufacturer shall at their option repair or replace their materials.

1. Warranty Period: Twenty (20) years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Expansion Joint Cover: Bellows w/ Flange

1. Joint Width: 2 inch.
2. Include special formed corners, tees, intersections, and wall flashings, each sealed watertight.
3. EJC-1

a. Basis of Design: Jointmaster, a division of Inpro; Series 672-G02-050; www.inprocorp.com
b. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of one of the manufacturers listed below:
   1) GAF; ____: www.gaf.com/#sle.
   2) Johns Manville; ____: www.jm.com/#sle.

2.02 COMPONENTS

A. Copings: Factory fabricated to sizes required; corners mitered; 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 ANSI/SPRI/FM 4435/ES-1 using test method RE-3 to positive and negative design wind pressure as defined by applicable local building code.
   3. Material: Formed steel sheet, galvanized, 24 gauge, 0.024 inch thick, minimum.
   4. Clips: Galvanized steel, 20 gage thich, minimum.
   5. Finish: 70 percent polyvinylidene fluoride.
   6. Color: To be selected by Architect/Engineer from manufacturer's standard range.
   7. Products:

2.03 FINISHES

A. Baked Enamel: Pigmented Organic Coating System, AAMA 2603; polyester baked enamel finish system; color as indicated.

B. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system; color as indicated.

2.04 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

3.01 EXAMINATION

A. Verify that deck, curbs, roof membrane, base flashing, and other items affecting work of this Section are in place and positioned correctly.

3.02 INSTALLATION

A. Install components in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.

B. Seal joints within components when required by component manufacturer.

C. Anchor components securely.

D. Coordinate installation of components of this section with installation of roofing membrane and base flashings.

E. Coordinate installation of sealants and roofing cement with work of this section to ensure water tightness.

F. Coordinate installation of flashing flanges into reglets.

END OF SECTION

SECTION 07 7123
MANUFACTURED GUTTERS AND DOWNSPOUTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pre-finished aluminum downspouts.

1.02 REFERENCE STANDARDS

A. ASTM A48/A48M - Standard Specification for Gray Iron Castings; 2022.

B. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

C. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Comply with SMACNA (ASMM) for sizing components for rainfall intensity determined by a storm occurrence of 1 in 100 years.

1.04 SUBMITTALS

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

B. Product Data: Provide data on prefabricated components.

C. Shop Drawings: Indicate locations, configurations, jointing methods, fastening methods, locations, and installation details.

D. Samples: Submit two samples, ____ inch long illustrating finish, and color.

1.05 DELIVERY, STORAGE, AND HANDLING

A. See Section 01 7419 - Construction Waste Management and Disposal for packaging waste requirements.

B. Stack material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope to drain.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Gutters and Downspouts:
   1. Alside, Inc; _____: www.alside.com/#sle.
   2. ATAS International, Inc; Downspouts: www.atas.com/#sle.
   3. Cheney Flashing Company: www.cheneyflashing.com/#sle.
   4. Drexel Metals Inc: www.drexmet.com/#sle.
   5. Hickman Edge Systems; _____: www.hickmanedgesystems.com/#sle.
   6. SAF Perimeter Systems, a division of Southern Aluminum Finishing Company, Inc: www.saf.com/persys/#sle.
   7. Substitutions: See Section 01 6000 - Product Requirements.

B. Scupper and Collectors:
   1. ATAS International, Inc; Scuppers and Collector Boxes: www.atas.com/#sle.
   2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS

A. Pre-Finished Aluminum Sheet: ASTM B209/B209M, ___ alloy, ___ temper; 0.032 inch thick.
   1. Finish: Plain, shop pre-coated with modified silicone coating.
   2. Color: As indicated.

2.03 COMPONENTS

A. Downspouts: CDA rectangular profile.

B. Anchors and Supports: Profiled to suit gutters and downspouts.
   1. Downspout Supports: Brackets.

2.04 FABRICATION

A. Form gutters and downspouts of profiles and size indicated.

B. Fabricate with required connection pieces.

C. Form sections square, true, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.

D. Hem exposed edges of metal.

E. Fabricate gutter and downspout accessories; seal watertight.

2.05 ACCESSORIES

A. Downspout Boots: Smooth interior without boxed corners or choke points; include integral lug slots and on-body cleanout and cover with neoprene gaskets.
   1. Configuration: Offset.
   2. Material: Cast iron; ASTM A48/A48M; casting thickness 3/8 inch (9.5 mm), minimum.
   3. Finish: Manufacturer's standard factory applied powder coat finish.
   4. Accessories: Manufacturer's standard stainless steel fasteners, stainless steel building wall anchors, and rubber coupling.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work.

3.02 PREPARATION

A. Paint concealed sheet metal surfaces and surfaces in contact with dissimilar metals with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch.

3.03 INSTALLATION

A. Install gutters, downspouts, and accessories in accordance with manufacturer's instructions.

B. Connect downspouts to downspout boots at ____ inches above grade. Grout connection watertight.

END OF SECTION

SECTION 07 7200
ROOF ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Roof curbs.

B. Roof penetrations mounting curbs.

C. Roof walkways and platforms.

1.02 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; 2023.

1.03 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.
   3. Submit documentation that roof accessories are acceptable to roofing manufacturer, and do not limit the roofing warranty.

1.04 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS

2.01 ROOF CURBS

A. Roof Curbs Manufacturers:
   1. AES Industries Inc: www.aescurb.com/#sle.
   2. The Pate Company: www.patecurbs.com/#sle.
   3. LMCurbs: www.lmcurbs.com/#sle.
   4. MKT Metal Manufacturing: www.mktduct.com/#sle.
   5. Substitutions: See Section 01 6000 - Product Requirements.

B. 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 standing seam metal roof panel system.
   2. Sheet Metal Material:
      a. Aluminum: 0.080 inch minimum thickness, with 3003 alloy, and H14 temper.
   3. Roofing Cants: Provide integral sheet metal roofing cants dimensioned to begin slope at top of roofing system at 1:1 slope; minimum cant height 4 inches.
   4. Provide layouts and configurations indicated on drawings.

2.02 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. Support Spacing and 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. Hardware, Bolts, Nuts, and Washers: Stainless steel, or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A153/A153M.

PART 3 EXECUTION

3.01 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.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions, in manner that maintains roofing system weather-tight integrity.

END OF SECTION

SECTION 07 7260
ROOF FALL PROTECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Provide mobile rooftop deadweight fall restraint/arrest anchor system.

B. System designed for [1] simultaneous user maximum.

1.02 REFERENCE STANDARDS

A. OSHA 1926.502 Fall Prevention Systems and Criteria and Practices

B. ANSI A10.32 - Requirements for Safety Belts, Harnesses, Lanyards, Lifelines-Construction and Demolition

C. ANSI Z 359 - Fall Protection Code

D. CSA Z259.16-04 – Design of Active Fall Protection Systems

1.03 SUBMITTALS

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

B. Product Data: Manufacturer's data and product information indicating the sizes, descriptions, capacities, test certifications, and other descriptive data showing in sufficient detail that the product complies with the contract requirements.

C. Shop Drawings: For fabrication showing the complete fall protection system. Layout drawings of each system indicating the locations of properly labeled components.

D. Product Certificate: Containing the manufacturer's serial number, name and part number of each individual component used in the systems.

E. Test Reports: Indicating completion of proof load testing on installed systems.

F. Systems Manual:
   1. Maintenance Procedures: Including parts list and maintenance requirements for all equipment.
   2. Operation Procedures: Indicating proper use of equipment for safe operation of the systems.
   3. Manufacturer's catalog data indicating the sizes, descriptions, capacities, test certifications, and other descriptive data showing sufficient detail that the product complies with the contract requirements.

G. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

A. Perform design under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in the State of Iowa.

B. Secure materials and equipment required under this section from a single manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original unopened packaging.

B. Store materials in original protective packaging.

C. Prevent soiling, physical damage, or moisture.

1.06 WARRANTY

A. Provide lifetime manufacturer warranty.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Kee Safety, Inc.: 100 Stradtman Street, Buffalo, NY 14206

B. Engineered Fall Protection; www.engineeredfallprotection.com/#sle

C. Tractel; www.tractel.com/#sle

D. Basis of Design: Kee Safety, Model: Kee Anchor Deadweight Anchor.

E. Substitutions: See Section 01 6000 - Product Requirements.

2.02 SYSTEM DESCRIPTION

A. Product is a mobile, non-penetrating deadweight anchor system for use on roofs up to 3 degree pitch. The quick-to-assemble system features a central pedestal attachment point which raises the height where the arrest force is applied.

B. System shall be specifically designed for Single Ply membrane roofing. For a single ply membrane with a smooth flat surface, the system will have 4 rubber molded weights and 8 hot dip galvanized weights.

C. The overall weight of the system is 670lbs. with individual pieces not exceeding 60 lbs.

D. The system footprint is 4’-6” x 4’-6”.

E. The total roof loading of the system shall not exceed 35 lbs./square foot.

2.03 COMPONENTS

A. Cross arms.

B. Pedestal.

C. Rubber molded weights: over 100 suction cups molded to each weight to maximize grip.

D. Galvanized weights.

E. Stabilizer arm.

2.04 MATERIALS

A. Primary components: Galvanized to BS EN ISO 1461.

B. Connectors: Comply with OSHA regulation 1926.502.

2.05 FABRICATION

A. Fabricate anchoring devices as recommended by the manufacturer to provide adequate support for intended use. Shop fabricate required anchorage posts using structural steel with material test certificates for full material traceability.

B. Welding: AWS structural specification D1.1 by certified welders.

C. Finishes:
   1. Structural Steel: Zinc Galvanized for corrosion resistance.

2.06 ACCESSORIES

A. Protective Cover: Provide (1) cover for each unit.

PART 3 - EXECUTION

3.01 DEMONSTRATION

A. Supplier shall provide a demonstration, utilizing actual device, at each location listed on the bid form. Demonstration shall include setup, assembly, use of the device, and disassembly.

B. Demonstrations shall be performed prior to final execution of the agreement.

3.02 INSTALLATION

A. User shall install according to approved shop drawings and manufacturer's instructions.

B. Do not load or stress system until materials and fasteners are properly installed and ready for service.

END OF SECTION

SECTION 07 8400
FIRESTOPPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Firestopping systems.

B. Firestopping of joints and penetrations in fire-resistance-rated and smoke-resistant assemblies, whether indicated on drawings or not, and other openings indicated.

1.02 REFERENCE STANDARDS

A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2022.

B. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2023a.

C. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).

D. ITS (DIR) - Directory of Listed Products; Current Edition.

E. FM 4991 - Approval Standard of Firestop Contractors; 2013.

F. FM (AG) - FM Approval Guide; Current Edition.

G. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).

H. UL 1479 - Standard for Fire Tests of Penetration Firestops; Current Edition, Including All Revisions.

I. UL (FRD) - Fire Resistance Directory; Current Edition.

1.03 SUBMITTALS

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

B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.

C. Product Data: Provide data on product characteristics, performance ratings, and limitations.

D. Sustainable Design Submittal: Submit VOC content documentation for nonpreformed materials.

E. Installer's qualification statement.

1.04 QUALITY ASSURANCE

A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
   1. Listing in UL (FRD), FM (AG), or ITS (DIR) will be considered as constituting an acceptable test report.

B. Installer Qualifications: Company specializing in performing the work of this section and:
   1. Trained by manufacturer.
   2. Approved by Factory Mutual Research Corporation under FM 4991

1.05 FIELD CONDITIONS

A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Firestopping Manufacturers:
   1. 3M Fire Protection Products; _____: www.3m.com/firestop/#sle.
   2. A/D Fire Protection Systems Inc; _____: www.adfire.com/#sle.
   3. Hilti, Inc; _____: www.hilti.com/#sle.
   4. Nelson FireStop Products; _____: www.nelsonfirestop.com/#sle.
   5. Specified Technologies Inc; _____: www.stifirestop.com/#sle.

6. Tremco Commercial Sealants & Waterproofing; TREMstop Acrylic: www.tremcosealants.com/#sle.
7. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS

A. Firestopping Materials: Any materials meeting requirements.

B. Volatile Organic Compound (VOC) Content: Provide products having VOC content lower than that required by SCAQMD 1168.

C. Mold and Mildew Resistance: Provide firestopping materials with mold and mildew resistance rating of zero(0) in accordance with ASTM G21.

D. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.

E. Fire Ratings: Refer to drawings for required systems and ratings.

2.03 FIRESTOPPING SYSTEMS

A. Firestopping: Any material meeting requirements.
1. Fire Ratings: Use any system that is listed by FM (AG) or UL (FRD) and tested in accordance with ASTM E814, ASTM E119, or UL 1479 with F Rating equal to fire rating of penetrated assembly and minimum T Rating Equal to F Rating and in compliance with other specified requirements.
2. Fire Ratings: See drawings for required systems and ratings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify openings are ready to receive the work of this section.

3.02 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other materials that could adversely affect bond of firestopping material.

B. Remove incompatible materials that could adversely affect bond.

3.03 INSTALLATION

A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.

B. Do not cover installed firestopping until inspected by authorities having jurisdiction.

C. Install labeling required by code.

3.04 CLEANING

A. Clean adjacent surfaces of firestopping materials.

3.05 PROTECTION

A. Protect adjacent surfaces from damage by material installation.

END OF SECTION

SECTION 07 9200
JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nonsag gunnable joint sealants.

B. Self-leveling pourable joint sealants.

C. Joint backings and accessories.

1.02 RELATED REQUIREMENTS

A. Section 09 2116 - Gypsum Board Assemblies: Sealing acoustical and sound-rated walls and ceilings.

B. Section 09 3000 - Tiling: Sealant between tile and plumbing fixtures and at junctions with other materials and changes in plane.

1.03 REFERENCE STANDARDS

A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015 (Reapproved 2022).

B. ASTM C834 - Standard Specification for Latex Sealants; 2017 (Reapproved 2023).

C. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2022.

D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

E. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).

F. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2022.

G. ASTM C1311 - Standard Specification for Solvent Release Sealants; 2022.

H. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2023.

I. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015 (Reapproved 2021).

J. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016 (Reapproved 2021).

1.04 SUBMITTALS

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

B. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
   1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
   2. List of backing materials approved for use with the specific product.
   3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
   4. Substrates the product should not be used on.
   5. Substrates for which use of primer is required.
   6. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
   7. Sample product warranty.
   8. Certification by manufacturer indicating that product complies with specification requirements.

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. Samples for Verification: Where custom sealant color is specified, obtain directions from Architect/Engineer and submit at least two physical samples for verification of color of each required sealant.

F. Preinstallation Field Adhesion Test Reports: Submit filled out Preinstallation Field Adhesion Test Reports log within 10 days after completion of tests; include bagged test samples and photographic records.

G. Executed warranty.

1.05 QUALITY ASSURANCE

A. Maintain one copy of each referenced document covering installation requirements on site.

B. 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/Engineer.

C. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.

1.06 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. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal , exhibit loss of adhesion or cohesion, or do not cure.

D. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
   1. Verify available warranties and warranty periods with manufacturers listed in Part 2 articles.
   2. Warranty Period: Two years from date of Substantial Completion.

E. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
   1. Movement of the structure caused by structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
   2. Disintegration of joint substrates from natural causes exceeding design specifications.
   3. Mechanical damage caused by individuals, tools, or other outside agents.
   4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 PRODUCTS

2.01 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
   1. Retain subparagraph below if sealants are indicated for Use I. Revise if a liquid other than water is used in testing.
   2. Suitability for Immersion in Liquids. Where sealants are indicated for Use I for joints that will be continuously immersed in liquids, provide products that have undergone testing

according to ASTM C 1247. Liquid used for testing sealants is deionized water, unless otherwise indicated.

C. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.

D. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.02 MANUFACTURERS

A. Nonsag Sealants:
1. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
2. Bostik Inc: www.bostik-us.com.
3. Dow Corning Corporation: www.dowcorning.com/construction/#sle.
4. Pecora Corporation: www.pecora.com.
5. Sika Corporation: www.usa-sika.com/#sle.
6. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
7. W.R. Meadows, Inc: www.wrmeadows.com/#sle.
8. Substitutions: See Section 01 6000 - Product Requirements.

B. Self-Leveling Sealants:
1. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
2. Bostik Inc: www.bostik-us.com.
3. Dow Corning Corporation: www.dowcorning.com/construction/#sle.
4. Pecora Corporation: www.pecora.com.
5. Sika Corporation: www.usa-sika.com/#sle.
6. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
7. W.R. Meadows, Inc: www.wrmeadows.com/#sle.
8. Substitutions: See Section 01 6000 - Product Requirements.

2.03 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:
   a. Wall expansion and control joints.
   b. Joints between door, window, and other frames and adjacent construction.
   c. Joints between different exposed materials.
   d. Openings below ledge angles in masonry.
   e. Other joints indicated below.
2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
   a. Joints between door, window, and other frames and adjacent construction.
   b. Gaps at electrical outlets, wiring devices, piping, and other openings; between wall/ceiling and other construction; and other flanking sound paths.
      1) Exception: Through-penetrations in sound-rated assemblies that are also fire-rated.
   c. Other joints indicated below.
3. Do not seal the following types of joints:
   a. Intentional weep holes 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 in Sheet Metal Fabrications: Butyl rubber, non-curing.

2. Lap Joints between Manufactured Metal Panels: Butyl rubber, noncuring.
3. Control and Expansion Joints in Concrete Paving: Self-leveling polyurethane "traffic-grade" sealant.

C. Interior Joints: Use non-sag polyurethane sealant, unless otherwise indicated.
1. Wall and Ceiling Joints in Non-Wet Areas: Acrylic emulsion latex sealant.
2. Wall and Ceiling Joints in Wet Areas: Non-sag polyurethane sealant for continuous liquid immersion.
3. Floor Joints in Wet Areas: Self-leveling polyurethane "traffic-grade" sealant suitable for continuous liquid immersion.
4. Wall, Ceiling, and Floor Joints Where Tamper-Resistance is Required: Non-sag tamper-resistant silyl-terminated polyurethane sealant.
5. Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; clear.
6. In Sound-Rated Assemblies: Acrylic emulsion latex sealant.
7. Narrow Control Joints in Interior Concrete Slabs: Self-leveling epoxy sealant.
8. Other Floor Joints: Self-leveling polyurethane traffic-grade sealant.

D. Interior Wet Areas: restrooms, kitchens, and food service areas; fixtures in wet areas include plumbing fixtures, food service equipment, countertops, cabinets, and other similar items.

E. Sound-Rated Assemblies: Walls and ceilings identified as STC-rated, sound-rated, or acoustical.

F. Areas Where Tamper-Resistance is Required: _____.

2.04 JOINT SEALANTS - GENERAL

2.05 NONSAG JOINT SEALANTS

A. 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: Clear.
2. Products:
a. Adfast USA Inc; ADSEAL KB 4800 Series: www.adfastcorp.com/#sle.
b. Everkem Diversified Products, Inc; TruSil 100: www.everkemproducts.com/#sle.
c. Pecora Corporation; Pecora 898 NST (Non-Staining Technology): www.pecora.com/#sle.
d. Sika Corporation; Sikasil GP: www.usa.sika.com/#sle.
e. Substitutions: See Section 01 6000 - Product Requirements.

B. Tamper-Resistant, Silyl-Terminated Polyurethane (STPU) Sealant: ASTM C920, Grade NS, Uses M and A; single component; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus ___ percent, minimum
2. Hardness Range: 25 to 30, Shore A, when tested in accordance with ASTM C661.
3. Color: Match adjacent finished surfaces.
4. Color: To be selected by Architect/Engineer from manufacturer's standard range.
5. Products:
a. Pecora Corporation; DynaTrol I-XL Hybrid: www.pecora.com/#sle.
b. Pecora Corporation; DynaFlex SC (Security Sealant): www.pecora.com/#sle.
c. Sika Corporation; SikaHyflex-150 LM: www.usa.sika.com/#sle.
d. Substitutions: See Section 01 6000 - Product Requirements.

C. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; multi-component; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 50 percent, minimum.
2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
3. Color: Match adjacent finished surfaces.
4. Service Temperature Range: Minus 40 to 180 degrees F.
5. Products:

a. Master Builders Solutions; MasterSeal NP1: www.master-builders-solutions.com/en-us/#sle.
b. Pecora Corporation; DynaFlex: www.pecora.com/#sle.
c. Sika Corporation; Sikaflex-2c NS: www.usa.sika.com/#sle.
d. Tremco Commercial Sealants & Waterproofing; Dymeric 240 FC: www.tremcosealants.com/#sle.
e. W. R. Meadows, Inc; POURTHANE NS: www.wrmeadows.com/#sle.
f. Substitutions: See Section 01 6000 - Product Requirements.

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 .
1. Movement Capability: Plus and minus 35 percent, minimum.
2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
3. Color: Match adjacent finished surfaces.
4. Service Temperature Range: Minus 40 to 180 degrees F.
5. Products:
a. Sika Corporation; Sikaflex-2c NS: www.usa.sika.com/#sle.
b. Substitutions: See Section 01 6000 - Product Requirements.

E. Non-Sag "Traffic-Grade" Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; explicitly approved by manufacturer for continuous water immersion and traffic without the necessity to recess sealant below traffic surface.
1. Movement Capability: Plus and minus 25 percent, minimum.
2. Color: Match adjacent finished surfaces.
3. Service Temperature Range: Minus 40 to 180 degrees F.

F. Tamper-Resistant Polyurethane Sealant: ASTM C920, Grade NS, Uses M, G, and A; single or multicomponent; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 12-1/2 percent, minimum.
2. Hardness Range: 50 to 60, Shore A, when tested in accordance with ASTM C661.
3. Color: Match adjacent finished surfaces.
4. Color: To be selected by Architect/Engineer from manufacturer's standard range.
5. Service Temperature Range: Minus 40 to 180 degrees F.
6. Products:
a. Pecora Corporation; ____: www.pecora.com/#sle.
b. Substitutions: See Section 01 6000 - Product Requirements.

G. Non-Curing Butyl Sealant: Solvent-based; ASTM C1311; single component, non-sag, non-skinning, non-hardening, non-bleeding.
1. Products:
a. Pecora Corporation; Pecora BA-98 Non-Skinning Butyl Sealant: www.pecora.com/#sle.
b. Basis of Design: Tremco; TremPro JS-773.
c. Substitutions: See Section 01 6000 - Product Requirements.

2.06 SELF-LEVELING JOINT SEALANTS

A. Self-Leveling Polyurethane Sealant for Horizontal Expansion Joints: ASTM C920, Grade P, Uses T, M, and O; multicomponent; explicitly approved by manufacturer for horizontal expansion joints.
1. Movement Capability: Plus and minus 25 percent, minimum.
2. Hardness Range: 30 to 35, Shore A, when tested in accordance with ASTM C661.
3. Color: To be selected by Architect/Engineer from manufacturer's standard range.
4. Tensile Strength: 200 to 250 psi in accordance with ASTM D412.

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. Hardness Range: 35 to 55, Shore A, when tested in accordance with ASTM C661.
3. Color: To be selected by Architect/Engineer from manufacturer's standard range.
4. Service Temperature Range: Minus 40 to 180 degrees F.
5. Products:
   a. Sika Corporation; Sikaflex-2c SL: www.usa.sika.com/#sle.
   b. W. R. MEADOWS, Inc; POURTHANE SL: www.wrmeadows.com/#sle.
   c. Substitutions: See Section 01 6000 - Product Requirements.

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: Multicomponent, 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. Color: To be selected by Architect/Engineer from manufacturer's standard colors.
4. Joint Width, Minimum: 1/8 inch.

2.07 ACCESSORIES

A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
1. 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. Preformed Extruded Silicone Joint Seal: Pre-cured low-modulus silicone extrusion, in sizes to fit applications indicated on drawings, combined with a neutral-curing liquid silicone sealant for bonding joint seal to substrates.
1. Size: 1 inch wide, in rolls 100 feet long.
2. Thickness: 0.78 inch, with ridges along outside bottom edges for bonding area.
3. Color: As selected by Architect..

C. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

D. Masking Tape: Self-adhesive, nonabsorbent, nonstaining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

E. Joint Cleaner: Noncorrosive and nonstaining type, type recommended by sealant manufacturer; compatible with joint forming materials.

F. Primers: Type recommended by sealant manufacturer to suit application; nonstaining.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

C. Verify that backer rods are of the correct size.

D. Preinstallation Adhesion Testing: Install a sample for each test location indicated in the test plan.
1. Test each sample as specified in PART 1 under QUALITY ASSURANCE article.
2. Notify Architect/Engineer of date and time that tests will be performed, at least seven days in advance.
3. Record each test on Preinstallation Adhesion Test Log as indicated.

4. If any sample fails, review products and installation procedures, consult manufacturer, or take other measures that are necessary to ensure adhesion; retest in a different location; if unable to obtain satisfactory adhesion, report to Architect/Engineer.
5. After completion of tests, remove remaining sample material and prepare joints for new sealant installation.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

E. Concrete Floor Joints That Will Be Exposed in Completed Work: Test joint filler in an inconspicuous area to verify that it does not stain or discolor slab.

3.03 INSTALLATION

A. Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Provide joint sealant installations complying with ASTM C1193.

C. Install acoustical sealant application work in accordance with ASTM C919.

D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

E. Install bond breaker backing tape where backer rod cannot be used.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

G. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

H. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

I. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.

3.04 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.

C. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

3.05 POST-OCCUPANCY

A. Post-Occupancy Inspection: Perform visual inspection of entire length of project sealant joints at a time that joints have opened to their greatest width, i.e., at low temperature in thermal cycle. Report failures immediately and repair them.

END OF SECTION

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SECTION 08 1113
HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-fire-rated hollow metal doors and frames.

B. Fire-rated hollow metal doors and frames.

C. Thermally insulated hollow metal doors with frames.

D. Hollow metal borrowed lites glazing frames.

1.02 RELATED REQUIREMENTS

A. Section 08 7100 - Door Hardware.

B. Section 08 8000 - Glazing: Glass for doors and borrowed lites.

1.03 ABBREVIATIONS AND ACRONYMS

A. ANSI: American National Standards Institute.

B. ASCE: American Society of Civil Engineers.

C. HMMA: Hollow Metal Manufacturers Association.

D. NAAMM: National Association of Architectural Metal Manufacturers.

E. NFPA: National Fire Protection Association.

F. SDI: Steel Door Institute.

G. UL: Underwriters Laboratories.

1.04 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2022.

C. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2023.

D. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2020.

E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

F. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2023.

G. 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; 2023.

H. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2020.

I. ASTM C476 - Standard Specification for Grout for Masonry; 2023.

J. BHMA A156.115 - Hardware Preparation in Steel Doors and Frames; 2016.

K. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

L. ITS (DIR) - Directory of Listed Products; Current Edition.

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 Receipt, Storage and Installation of Hollow Metal Doors and Frames; 2017.

P. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2014.

Q. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2022.

R. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives; 2022.

S. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.

T. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2023.

U. UL (DIR) - Online Certifications Directory; Current Edition.

V. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

W. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; Current Edition, Including All Revisions.

1.05 SUBMITTALS

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

B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.

C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.

D. Schedule: Provide a schedule of hollow metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with door hardware schedule.

E. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.

F. Manufacturer's Qualification Statement.

G. Installer's Qualification Statement.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Provide hollow metal doors and frames from SDI Certified manufacturer: https://steeldoor.org/sdi-certified/#sle.

B. Maintain at project site copies of reference standards relating to installation of products specified.

1.07 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.

1.08 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.09 COORDINATION

A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to the Project site in time for instllation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hollow Metal Doors and Frames:
   1. Ceco Door, an Assa Abloy Group company: www.assaabloydss.com/#sle.
   2. Curries, an Assa Abloy Group company: www.assaabloydss.com/#sle.
   3. Krieger Specialty Products: www.kriegerproducts.com/#sle.

4. Steelcraft, an Allegion brand: www.allegion.com/#sle.
5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS

A. Requirements for Hollow Metal Doors and Frames:
   1. Steel Sheet: Comply with one or more of the following requirements; galvannealed 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: Beveled, both sides.
   5. Typical Door Face Sheets: Flush.
   6. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings. Style: Flush.
   7. 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.
   8. Zinc Coating for Typical Interior and/or Exterior Locations: Provide metal components zinc-coated (galvanized) and/or zinc-iron alloy-coated (galvannealed) by the hot-dip process in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness, unless noted otherwise for specific hollow metal doors and frames.
      a. Based on SDI Standards: Provide at least A40/ZF120 (galvannealed) when necessary, coating not required for typical interior door applications, and at least A60/ZF180 (galvannealed) for corrosive locations.

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.

2.03 HOLLOW METAL DOORS

A. Door Finish: Factory primed and field finished

B. Exterior Doors: Thermally insulated.
   1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
      a. Level 4 - Maximum-duty.
      b. Physical Performance Level A, 1,000,000 cycles; in accordance with ANSI/SDI A250.4.
      c. Model 2 - Seamless.
      d. Door Face Metal Thickness: 14 gage, 0.067 inch, minimum.
      e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
   2. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
   3. Door Thermal Resistance: R-Value of ___.
   4. Door Thickness: 1-3/4 inches, nominal.
   5. Weatherstripping: Refer to Section 08 7100.

C. Interior Doors, Non-Fire Rated:
   1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
      a. Level 4 - Maximum-duty.
      b. Physical Performance Level A, 1,000,000 cycles; in accordance with ANSI/SDI A250.4.
      c. Model 2 - Seamless.
      d. Door Face Metal Thickness: 14 gage, 0.067 inch, minimum.
   2. Door Core Material: Vertical steel stiffeners.
   3. Door Thickness: 1-3/4 inches, nominal.
   4. Door Finish: Factory primed and field finished.

D. Fire-Rated Doors:
   1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
      a. Level 4 - Maximum-duty.
      b. Physical Performance Level A, 1,000,000 cycles; in accordance with ANSI/SDI A250.4.
      c. Model 2 - Seamless.
      d. Door Face Metal Thickness: 14 gage, 0.067 inch, minimum.
   2. Fire Rating: As indicated on Door Schedule, tested in accordance with UL 10C and NFPA 252 ("positive pressure fire tests").
   3. Provide units listed and labeled by UL (DIR) or ITS (DIR).
      a. Attach fire rating label to each fire rated unit.
   4. Smoke and Draft Control Doors (Indicated with letter "S" on Drawings and/or Door Schedule): Self-closing or automatic closing doors in accordance with NFPA 80 and NFPA 105, with fire-resistance-rated wall construction rated the same or greater than the fire-rated doors, and the following;
      a. Maximum Air Leakage: 3.0 cfm/sq ft of door opening at 0.10 inch w.g. pressure, when tested in accordance with UL 1784 at both ambient and elevated temperatures.
      b. Gasketing: Provide gasketing or edge sealing as necessary to achieve leakage limit.
      c. Label: Include the "S" label on fire-rating label of door.
   5. Door Core Material: Vertical steel stiffeners.
   6. Door Thickness: 1-3/4 inches, nominal.

2.04 HOLLOW METAL FRAMES

A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.

B. Frame Finish: Factory primed and field finished.

C. Exterior Door Frames: Full profile/continuously welded type.
   1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A40/ZF120 coating.
   2. Frame Metal Thickness: 14 gage, 0.067 inch, minimum.
   3. Weatherstripping: Separate, see Section 08 7100.

D. Interior Door Frames, Non-Fire Rated: Full profile/continuously welded type.

E. Door Frames, Fire-Rated: Full profile/continuously welded type.
   1. Fire Rating: Same as door, labeled.
   2. Frame Metal Thickness: 14 gage, 0.067 inch, minimum.

F. Borrowed Lites Glazing Frames: Construction and face dimensions to match door frames, and as indicated on drawings.

G. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.

H. Frames in Masonry Walls: Size to suit masonry coursing with head member 4 inch high to fill opening without cutting masonry units.
   1. Size to suit masonry coursing with head member 4 inch high to fill opening without cutting masonry units.
   2. All frames in masonry and concrete construction shall be back primed with manufacturer’s standard bitumastic coating.

I. Frames Wider than 48 inches: Reinforce with steel channel fitted tightly into frame head, flush with top.

2.05 FINISHES

A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

B. 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.

1. Fire-Rated Frames: Comply with fire rating requirements indicated.

2.06 ACCESSORIES

A. Door Window Frames: Door window frames with glazing securely fastened within door opening.
   1. Size: As indicated on drawings.
   2. Frame Material: 14 gauge, ___ inch, galvanized steel.

B. Glazing: As specified in Section 08 8000.

C. Removable Stops: Formed sheet steel, mitered corners; prepared for countersink style tamper proof screws. Install on non-secure side of door.

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

3.01 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.

3.02 PREPARATION

A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

3.03 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. Install fire rated units in accordance with NFPA 80.

C. Coordinate frame anchor placement with wall construction.

D. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.

E. Install door hardware as specified in Section 08 7100.

F. Comply with glazing installation requirements of Section 08 8000.

3.04 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.

3.05 ADJUSTING

A. Adjust for smooth and balanced door movement.

3.06 SCHEDULE

A. Refer to Door and Frame Schedule on the drawings.

END OF SECTION

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SECTION 08 3323
OVERHEAD COILING DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Exterior coiling doors.

B. Electric operators and control stations.

C. Overhead coiling doors, operating hardware, exterior; electrically operated.

D. Wiring from electric circuit disconnect to operators and control stations.

1.02 RELATED REQUIREMENTS

A. Section 07 9200 - Joint Sealants: Sealing joints between frames and adjacent construction.

B. Section 08 7100 - Door Hardware: Cylinder cores and keys.

C. Section 11 1900 - Detention Security Equipmet

D. Section 26 0583 - Wiring Connections: Power to disconnect.

1.03 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

B. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2023.

C. ASTM E2226 - Standard Practice for Application of Hose Stream; 2015b (Reapproved 2019).

D. FBC TAS 201 - Impact Test Procedures; Testing Application Standard; 1994.

E. ITS (DIR) - Directory of Listed Products; Current Edition.

F. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2020.

G. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts; 2008 (Reaffirmed 2020).

H. NEMA MG 1 - Motors and Generators; 2021.

I. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2022.

J. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives; 2022.

K. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.

L. UL (DIR) - Online Certifications Directory; Current Edition.

M. UL 10B - Standard for Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

N. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems; Current Edition, Including All Revisions.

1.04 SUBMITTALS

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

B. Product Data: Provide general construction and component connections and details.

C. Shop Drawings: Indicate pertinent dimensioning, anchorage methods, hardware locations, and installation details.

D. Manufacturer's Installation Instructions: Indicate installation sequence and procedures, adjustment and alignment procedures.

E. Manufacturer's qualification statement.

F. Installer's qualification statement.

G. Maintenance Data: Indicate lubrication requirements and frequency and periodic adjustments required.

1.05 QUALITY ASSURANCE

A. Products Requiring Electrical Connection: Listed and classified by ITS (DIR), UL (DIR), or testing firm acceptable to authorities having jurisdiction as suitable for purpose specified and indicated.

1.06 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide 2-year manufacturer warranty for roller shaft counterbalance assembly. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Overhead Coiling Doors:
   1. C.H.I. Overhead Doors: www.chiohd.com/#sle.
   2. Clopay Building Products: www.clopaydoor.com/#sle.
   3. Cornell Iron Works, Inc; <>: www.cornelliron.com/#sle.
   4. Raynor Garage Doors: www.raynor.com/#sle.
   5. The Cookson Company; <>: www.cooksondoor.com/#sle.
   6. Wayne-Dalton, a Division of Overhead Door Corporation; <>: www.wayne-dalton.com/#sle.
   7. Substitutions: See Section 01 6000 - Product Requirements.

2.02 COILING DOORS

A. Exterior Coiling Doors: Stainless steel slat curtain.
   1. Capable of withstanding positive and negative wind loads of 20 psf without undue deflection or damage to components.
   2. Sandwich Slats: Manufacturer's standard, with core of foamed-in-place polyurethane insulation; minimum R-value of 4.88.
   3. Nominal Slat Size: 2 inches wide by required length.
   4. Finish: No. 4 - Brushed.
   5. Guide, Angles: Galvanized steel.
   6. Hood Enclosure: Manufacturer's standard; galvanized steel.
   7. Electric operation.
   8. Mounting: Within framed opening.
   9. Locking Devices: See door hardware set DE-05 / 19.0.

2.03 MATERIALS AND COMPONENTS

A. Metal Curtain Construction: Interlocking slats.
   1. Slat Ends: Each slat fitted with end locks to act as wearing surface in guides and to prevent lateral movement.
   2. Curtain Bottom for Slat Curtains: Fitted with angles to provide reinforcement and positive contact in closed position.
   3. Weatherstripping for Exterior Doors: Moisture and rot proof, resilient type, located at jamb edges, bottom of curtain, and where curtain enters hood enclosure of exterior doors.
   4. Stainless Steel Slats: Minimum thickness, 20 gauge, .036 inch, complying with ASTM A 666, Type 304, rollable temper.

B. Guide Construction: Continuous, of profile to retain door in place, mounting brackets of same metal.

C. Guides - Angle: ASTM A36/A36M metal angles, size as indicated.
   1. Stainless Steel: ASTM A 666, Type 304, rollable temper.

D. Hood Enclosure and Trim: Internally reinforced to maintain rigidity and shape.
   1. Minimum thickness; 24 gauge, .25 inch.

E. Lock Hardware:
   1. Cylindrical Locking Mechanism: Latchset lock cylinder, specified in Section 11 1900.
   2. Latch Handle: Manufacturer's standard.

F. Roller Shaft Counterbalance: Steel pipe and helical steel spring system, capable of producing torque sufficient to ensure smooth operation of curtain from any position and capable of holding position at mid-travel; with adjustable spring tension; requiring 25 lb nominal force to operate.

2.04 ELECTRIC OPERATION

A. Operator, Controls, Actuators, and Safeties: Comply with UL 325; provide products listed by ITS (DIR), UL (DIR), or testing agency acceptable to authorities having jurisdiction.
   1. Provide interlock switches on motor operated units.
   2. Provide tamperproof operation cycle counter.

B. Electric Operators:
   1. Mounting: Side mounted.
   2. Motor Enclosure:
      a. Exterior Coiling Doors: NEMA MG 1, Type 4; totally enclosed fan cooled (TEFC).
   3. Motor Rating: 3/4 HP; continuous duty.
   4. Motor Voltage: 120 volts, single phase, 60 Hz.
   5. Motor Controller: NEMA ICS 2, full voltage, reversing magnetic motor starter.
   6. Controller Enclosure: NEMA 250, Type 4.
   7. Brake: Manufacturer's standard type, activated by motor controller.
   8. Manual override in case of power failure.
   9. See Section 26 0583 for electrical connections.

C. Control Station: Provide standard key-operated, 'Open-Close-Stop' continuous-constant control device for each operator complying with UL 325. Reference Security Hardware requirements of section 11 1900.
   1. 24 volt circuit.
   2. Surface mounted, at interior door jamb.
   3. Entrapment Protection Devices: Provide sensing devices and safety mechanisms complying with UL 325.
      a. Secondary Device: Provide electric sensing edge with wireless edge kit or non-monitored safety edge as an option along with continuous-constant control device.

D. Safety Edge: Located at bottom of coiling door, full width, electro-mechanical sensitized type, wired to stop and reverse door direction upon striking object, hollow neoprene covered.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that adjacent construction is suitable for door installation.

B. Verify that electrical services have been installed and are accessible.

C. Verify that door opening is plumb, header is level, and dimensions are correct.

D. Notify Architect/Engineer of any unacceptable conditions or varying dimensions.

E. Commencement of installation indicates acceptance of substrate and door opening conditions.

3.02 INSTALLATION

A. Install units in accordance with manufacturer's instructions.

B. Install fire-rated doors in accordance with NFPA 80.

C. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.

D. Securely and rigidly brace components suspended from structure.

E. Fit and align assembly including hardware; level and plumb, to provide smooth operation.

F. Coordinate installation of electrical service with Section 26 0583.

G. Complete wiring from disconnect to unit components.

H. Install enclosure and perimeter trim.

3.03 TOLERANCES

A. Maintain dimensional tolerances and alignment with adjacent work.

B. Maximum Variation From Plumb: 1/16 inch.

C. Maximum Variation From Level: 1/16 inch.

D. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch per 10 feet straight edge.

3.04 ADJUSTING

A. Adjust operating assemblies for smooth and noiseless operation.

3.05 CLEANING

A. Clean installed components.

B. Remove labels and visible markings.

END OF SECTION

SECTION 08 7100
DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes commercial door hardware for the following:
   1. Swinging doors.

B. Door hardware includes, but is not necessarily limited to, the following:
   1. Mechanical door hardware.
   2. Electromechanical door hardware.
   3. Cylinders specified for doors in other sections.

C. Related Sections:
   1. Division 08 Section “Hollow Metal Doors and Frames”.

D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
   1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
   2. ICC/IBC - International Building Code.
   3. NFPA 70 - National Electrical Code.
   4. NFPA 80 - Fire Doors and Windows.
   5. NFPA 101 - Life Safety Code.
   6. NFPA 105 - Installation of Smoke Door Assemblies.
   7. State Building Codes, Local Amendments.

E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:
   1. ANSI/BHMA Certified Product Standards - A156 Series.
   2. UL10C - Positive Pressure Fire Tests of Door Assemblies.
   3. ANSI/UL 294 - Access Control System Units.
   4. UL 305 - Panic Hardware.
   5. ANSI/UL 437- Key Locks.

1.3 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
3. Content: Include the following information:
   a. Type, style, function, size, label, hand, and finish of each door hardware item.
   b. Manufacturer of each item.
   c. Fastenings and other pertinent information.
   d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
   e. Explanation of abbreviations, symbols, and codes contained in schedule.
   f. Mounting locations for door hardware.
   g. Door and frame sizes and materials.
   h. Warranty information for each product.
4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Shop Drawings: Details of electrified access control hardware indicating the following:
1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
   a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
   b. Complete (risers, point-to-point) access control system block wiring diagrams.
   c. Wiring instructions for each electronic component scheduled herein.
2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

E. Informational Submittals:
   1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

F. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

1.4 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).

C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

   1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
   2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.

F. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.

G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
   1. Function of building, purpose of each area and degree of security required.
   2. Plans for existing and future key system expansion.

3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures

I. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified

electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
   1. Structural failures including excessive deflection, cracking, or breakage.
   2. Faulty operation of the hardware.
   3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
   4. Electrical component defects and failures within the systems operation.

C. Warranty Period: Unless otherwise indicated, warranty shall be one year from date of Substantial Completion.

1.8 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.

B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:
   1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.

C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

A. Hinges: ANSI/BHMA A156.1 butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.
   1. Quantity: Provide the following hinge quantity:
      a. Two Hinges: For doors with heights up to 60 inches.
      b. Three Hinges: For doors with heights 61 to 90 inches.
      c. Four Hinges: For doors with heights 91 to 120 inches.
      d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
   2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
      a. Widths up to 3’0”: 4-1/2” standard or heavy weight as specified.
      b. Sizes from 3’1” to 4’0”: 5” standard or heavy weight as specified.
   3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
      a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
      b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
   4. Hinge Options: Comply with the following:
      a. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.
   5. Manufacturers:
      a. McKinney (MK) - TA/T4A Series, 5 knuckle.
      b. dormakaba Best (ST) - F/FBB Series, 5 knuckle.

B. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 continuous geared hinge. with minimum 0.120-inch thick extruded 6063-T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.
   1. Manufacturers:
      a. Bommer Industries (BO).
      b. Pemko (PE).

2.3 DOOR OPERATING TRIM

A. Flush Bolts and Surface Bolts: Provide products conforming to ANSI/BHMA A156.3 and A156.16, Grade 1.
   1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
   2. Furnish dust proof strikes for bottom bolts.

3. Surface bolts to be minimum 8” in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
5. Manufacturers:
   a. Rockwood (RO).
   b. Trimco (TC).

B. Door Push Plates and Pulls: ANSI/BHMA A156.6 door pushes and pull units of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.
1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
4. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.
5. Manufacturers:
   a. Rockwood (RO).
   b. Trimco (TC).

2.4 CYLINDERS AND KEYING

A. General: Cylinders provided by the Owner.

B. Construction Keying: Provide construction master keyed cylinders.

2.5 MECHANICAL LOCKS AND LATCHING DEVICES

A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.
1. Heavy duty mortise locks shall have a ten-year warranty.
2. Where specified, provide status indicators with highly reflective color and wording for “locked/unlocked” or “vacant/occupied” with custom wording options if required. Indicator to be located above the cylinder with the inside thumb-turn not blocking the visibility of the indicator status. Indicator window size to be a minimum of 2.1” x 0.6” with a curved design allowing a 180-degree viewing angle with protective covering to prevent tampering.
3. Manufacturers:
   a. Sargent Manufacturing (SA) - 8200 Series.
   b. No Substitution.

B. Cylindrical Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.2, Series 4000, Operational Grade 1 Certified Products Directory (CPD) listed.
   1. Heavy duty cylindrical locks shall have a seven-year warranty.
   2. Vertical Impact: Exceed 100 vertical impacts (20 times ANSI/BHMA A156.2 requirements).
   3. Furnish with solid cast levers, standard 2 3/4” backset, and 1/2" (3/4" at rated paired openings) throw brass or stainless steel latchbolt.
   4. Locks are to be non-handed and fully field reversible.
   5. Manufacturers:
      a. Sargent Manufacturing (SA) - 10X Line.
      b. No Substitution.

2.6 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
   1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
   2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
   3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
   4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:
   1. Strikes for Mortise Locks and Latches: BHMA A156.13.
   2. Strikes for Bored Locks and Latches: BHMA A156.2.
   3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
   4. Dustproof Strikes: BHMA A156.16.

2.7 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:
   1. Exit devices shall have a five-year warranty.
   2. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
   3. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer’s catalog and template book for specific requirements.
   4. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.

5. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
6. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.
   a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
   b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.
7. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
8. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2” wide stiles.
9. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
10. Rail Sizing: Provide exit device rails factory sized for proper door width application.
11. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Exit device latch to be stainless steel, pullman type, with deadlock feature.
   1. Manufacturers:
      a. Corbin Russwin Hardware (RU) - ED4000 / ED5000 Series.
      b. Sargent Manufacturing (SA) - 80 Series.

2.8 DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:
   1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.
   2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
   3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
   4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.

5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.

B. Door Closers, Surface Mounted (Large Body Cast Iron): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control.
1. Large body cast iron surface mounted door closers shall have a 25-year warranty.
2. Manufacturers:
   a. Corbin Russwin Hardware (RU) - DC8000 Series.
   b. Norton Rixson (NO) - 9500 Series.
   c. Sargent Manufacturing (SA) - 281 Series.

2.9 ARCHITECTURAL TRIM

A. Door Protective Trim
1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1” LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
3. Where plates are applied to fire rated doors with the top of the plate more than 16” above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer’s catalog and template book for specific requirements for size and applications.
4. Protection Plates: ANSI/BHMA A156.6 protection plates (kick, armor, or mop), fabricated from the following:
   a. Stainless Steel: 300 grade, 050-inch thick.
5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
6. Manufacturers:
   a. Rockwood (RO).
   b. Trimco (TC).

2.10 DOOR STOPS AND HOLDERS

A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.

B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
   1. Manufacturers:
      a. Rockwood (RO).
      b. Trimco (TC).

C. Overhead Door Stops and Holders: ANSI/BHMA A156.8, Grade 1 Certified Products Directory (CPD) listed overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.
   1. Manufacturers:
      a. Norton Rixson (RF).
      b. Sargent Manufacturing (SA).

2.11 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
   1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
   1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NPFA 252, Standard Methods of Fire Tests of Door Assemblies.

D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

F. Manufacturers:
   1. Pemko (PE).
   2. Reese Enterprises, Inc. (RE).

2.12 ELECTRONIC ACCESSORIES

A. Key Switches: Key switches furnished standard with stainless steel single gang face plate with a 12/24VDC bi-color LED indicator. Integral backing bracket permits

integration with any 1 1/4" or 1 1/2" mortise type cylinder. Key switches available as momentary or maintained action and in narrow face plate options.

1. Manufacturers:
    a. Alarm Controls (AK) - MCK Series.
    b. Securitron (SU) - MK Series.

2.13 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.14 FINISHES

A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. DHI TDH-007-20: Installation Guide for Doors and Hardware.

3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

A. Field Inspection (Punch Report): Reference Division 01 Sections “Closeout Procedures”. Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.

1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
   1. Quantities listed are for each pair of doors, or for each single door.
   2. The supplier is responsible for handing and sizing all products.
   3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
   4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.

B. Manufacturer's Abbreviations:

1. MK - McKinney
2. PE - Pemko
3. SU - Securitron
4. RO - Rockwood
5. SA - SARGENT
6. OT - Other
7. RF - Rixson
8. NO - Norton

Hardware Sets

Set: 1.0

Doors: 2100E, 1241E

2 Continuous Hinge	CFM83HD1 x Torx x Heigh Required		PE
2 Flush Bolt	555 TORX	US26D	RO
1 Dust Proof Strike	570 TORX	US26D	RO
1 Storeroom Lock	LC 36 10XG04 LL	US26D	SA
1 Cylinder	Provided by the Owner		OT
1 Surf Overhead Hold Open	9-x26 Torx	630	RF
1 Surface Closer w/ Hold Open	MC 36 281 CPSH	EN	SA
2 Kick Plate	K1050 10" x 1" LDW CSK TORX Screws BEV	US32D	RO

1 Threshold	253x3AFG Torx	PE
1 Rain Guard	346A Torx	PE
1 Gasketing	2891APK Torx	PE
2 Sweep	3452CNB Torx	PE
2 Astragal	18041CNB Torx	PE

Notes: Door normally closed, latched and secured.
Entry to roof by key override.

Install gasketing prior to soffit mounted hardware. Do not notch gasketing for soffit mounted hardware.

Mount closer on active leaf and overhead holder on inactive leaf.

No Threshold at door 2100E

Set: 2.0

Doors: 1207

6 Hinge, Full Mortise, Hvy Wt	T4A3786 NRP 4-1/2" x 4-1/2" TXS-Stainless	US26D	MK
2 Surface Vert Rod Exit	LC 36 NB8706 ETL	US32D	SA
2 Cylinder	Provided by the Owner		OT
2 Surface Closer	MC 36 281 CPS	EN	SA
2 Kick Plate	K1050 10" x 1" LDW CSK TORX Screws BEV	US32D	RO

Set: 3.0

Doors: 1203, 1221, 1222

3 Hinge, Full Mortise, Hvy Wt	T4A3786 NRP 4-1/2" x 4-1/2" TXS-Stainless	US26D	MK
1 Storeroom Lock	LC 36 10XG04 LL	US26D	SA
1 Cylinder	Provided by the Owner		OT
1 Wall Stop	400 / 403 TORX	US26D	RO
3 Silencer	608-RKW		RO
2 Kick Plate	K1050 10" x 1" LDW CSK TORX Screws BEV	US32D	RO

Set: 4.0

Doors: 1238

3 Hinge, Full Mortise, Hvy Wt	T4A3786 NRP 4-1/2" x 4-1/2" TXS-Stainless	US26D	MK
1 Storeroom Lock	LC 36 10XG04 LL	US26D	SA
1 Cylinder	Provided by the Owner		OT
1 Surface Closer	MC 36 281 O	EN	SA
1 Kick Plate	K1050 10" x 2" LDW CSK TORX Screws BEV	US32D	RO
1 Wall Stop	400 / 403 TORX	US26D	RO
3 Silencer	608-RKW		RO

Set: 5.0

Doors: 1205

3 Hinge, Full Mortise, Hvy Wt	T4A3786 NRP 4-1/2" x 4-1/2" TXS-Stainless	US26D	MK
1 Storeroom Lock	LC 36 10XG04 LL	US26D	SA
1 Cylinder	Provided by the Owner		OT
1 Surface Closer	MC 36 281 O	EN	SA
1 Kick Plate	K1050 10" x 2" LDW CSK TORX Screws BEV	US32D	RO
1 Sweep	3452CNB Torx		PE
1 Gasketing	2891APK Torx		PE
1 Threshold	253x3AFG Torx		PE
1 Wall Stop	400 / 403 TORX	US26D	RO
3 Silencer	608-RKW		RO

Set: 6.0

Doors: 1206

3 Hinge, Full Mortise, Hvy Wt	T4A3786 NRP 5" x 4-1/2" TXS-Stainless	US26D	MK
1 Storeroom Lock	LC 36 10XG04 LL	US26D	SA
1 Cylinder	Provided by the Owner		OT
1 Surface Closer	MC 36 281 O	EN	SA
1 Kick Plate	K1050 10" x 2" LDW CSK TORX Screws BEV	US32D	RO
1 Wall Stop	400 / 403 TORX	US26D	RO
3 Silencer	608-RKW		RO

Set: 7.0

Doors: 1235B

3 Hinge, Full Mortise, Hvy Wt	T4A3786 NRP 5" x 4-1/2" TXS-Stainless	US26D	MK
1 Storeroom Lock	LC 36 10XG04 LL	US26D	SA
1 Cylinder	Provided by the Owner		OT
1 Surface Closer	MC 36 281 P10	EN	SA
1 Kick Plate	K1050 10" x 2" LDW CSK TORX Screws BEV	US32D	RO
1 Wall Stop	400 / 403 TORX	US26D	RO
3 Silencer	608-RKW		RO

Set: 8.0

Doors: 1219

3 Hinge, Full Mortise, Hvy Wt	T4A3786 NRP 5" x 4-1/2" TXS-Stainless	US26D	MK
1 Storeroom Lock	LC 36 10XG04 LL	US26D	SA
1 Cylinder	Provided by the Owner		OT
1 Surface Closer w/ Hold Open	MC 36 281 CPSH	EN	SA
1 Kick Plate	K1050 10" x 2" LDW CSK TORX Screws BEV	US32D	RO
1 Wall Stop	400 / 403 TORX	US26D	RO
3 Silencer	608-RKW		RO

Set: 9.0

Doors: 1235A

3 Hinge, Full Mortise, Hvy Wt	T4A3786 NRP 5" x 4-1/2" TXS-Stainless	US26D	MK
1 Storeroom Lock	LC 36 10XG04 LL	US26D	SA
1 Cylinder	Provided by the Owner		OT
1 Surf Overhead Stop	9-x36 Torx	630	RF
1 Surface Closer	MC 36 281 O	EN	SA
1 Kick Plate	K1050 10" x 2" LDW CSK TORX Screws BEV	US32D	RO
3 Silencer	608-RKW		RO

Set: 10.0

Doors: 1213

3 Hinge, Full Mortise, Hvy Wt	T4A3786 NRP 4-1/2" x 4-1/2" TXS-Stainless	US26D	MK
1 Storeroom Lock w/ Indicator	36 V21 EMB 8251 LNL	US26D	SA
1 Wall Stop	400 / 403 TORX	US26D	RO
3 Silencer	608-RKW		RO

Set: 11.0

Doors: 1211, 1212

3 Hinge, Full Mortise, Hvy Wt	T4A3786 NRP 4-1/2" x 4-1/2" TXS-Stainless	US26D	MK
1 Office Lock	LC 36 10XG05 LL	US26D	SA
1 Surf Overhead Stop	9-x36 Torx	630	RF
3 Silencer	608-RKW		RO

Set: 12.0

Doors: 1218

3 Hinge, Full Mortise, Hvy Wt	T4A3786 NRP 5" x 4-1/2" TXS-Stainless	US26D	MK
1 Office Lock	LC 36 10XG05 LL	US26D	SA
1 Surf Overhead Stop	9-x36 Torx	630	RF
3 Silencer	608-RKW		RO

Set: 13.0

Doors: 1199E, 1200E, 1237E

1 Rain Guard	346A Torx		PE
1 Armor Plate	K1050 34" x 1" LDW CSK TORX Screws BEV	US32D	RO

Notes:
Balance of hardware provided by detention door supplier.
Armor Plate shall be included at door 1237E only
Verify thickness of threshold with detention door supplier prior to ordering.

Set: 14.0

Doors: 1240E

1 Cylinder	Provided by the Owner		OT
1 Keyswitch	MK		SU

Set: 15.0

Doors: 1200A

2	Surface Closer	MC 36 281 P10 CPSH	EN	SA
6	Hinge, Full Mortise, Hvy Wt	T4A3786 NRP 5” X 4-1/2” TXS-Stainless		
2	Electromagnetic Holders	998M x Torx	689	RF
2	Multi-Point Lock, Classroom	LC NB 36 701315 ETL	US26D	SA
2	Cylinder	Provided by Owner		OT
1	Gasketing	S88D		PE
2	Sweep	3452CNB Torx		PE
2	Astragal	18041 CNB Torx		PE
2	Armor Plate	K1050 34" x 1" LDW CSK TORX Screws BEV	US32D	RO

Notes: Balance of hardware provided by detention door supplier.
Fire rated door in 2hr fire wall. Tie in hold opens with fire alarm.

Set: 16.0

Doors: 1200B, 1201, 1208, 1240

2	Armor Plate	K1050 34" x 1" LDW CSK TORX Screws BEV	US32D	RO

Mark	Hardware
1199E	13.0/ DE-04
1200A	15.0/ DE-06
1200B	16.0/ DE-01
1200E	13.0/ DE-04
1201	16.0/ DE-02
1203	3.0
1205	5.0
1206	6.0

1207	2.0
1208	16.0/ DE-02
1211	11.0
1212	11.0
1213	10.0
1218	12.0
1219	8.0
1221	3.0
1222	3.0

1235A	9.0
1235B	7.0
1237E	13.0/ DE-03
1238	4.0
1240	16.0/ DE-02
1240E	14.0/ DE-05
1241E	1.0
2100E	1.0

END OF SECTION

SECTION 08 8000
GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Insulating glass units.

B. Glazing units.

C. Plastic films.

D. Glazing compounds.

1.02 RELATED REQUIREMENTS

A. Section 08 1113 - Hollow Metal Doors and Frames: Glazed lites in doors and borrowed lites.

B. Section 08 1416 - Flush Wood Doors: Glazed lites in doors.

C. Section 08 4313 - Aluminum-Framed Storefronts: Glazing provided as part of storefront assembly.

D. Section 08 4413 - Glazed Aluminum Curtain Walls: Glazing provided as part of wall assembly.

1.03 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; 2015 (Reaffirmed 2020).

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 2019).

E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

F. ASTM C1036 - Standard Specification for Flat Glass; 2021.

G. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.

H. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2019.

I. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).

J. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass; 2021a.

K. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2016.

L. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2019.

M. ASTM F1233 - Standard Test Method for Security Glazing Materials And Systems; 2021.

N. GANA (GM) - GANA Glazing Manual; 2022.

O. GANA (SM) - GANA Sealant Manual; 2008.

P. GANA (LGRM) - Laminated Glazing Reference Manual; 2019.

Q. IGMA TM-3000 - North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial & Residential Use; 1990 (2016).

R. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2023.

S. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2023.

T. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2023.

1.04 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.

1.05 SUBMITTALS

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

B. Product Data on Insulating Glass Unit, Glazing Unit, and Plastic Film 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.

D. Samples: Submit two samples 12 by 12 inch in size of glass units.

E. Samples: Submit 12 inch long bead of glazing sealant, color as selected.

F. Samples: Submit one sample [12] by [12] inch ([___] by [___] mm) in size of plastic film.

G. Certificate: Certify that products of this section meet or exceed specified requirements.

H. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

I. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

J. Delegated-Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with GANA (GM), GANA (SM), GANA (LGRM), and IGMA TM-3000 for glazing installation methods.

1.07 MOCK-UPS

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Provide mock-up of one window assembly including glass, air/vapor barrier, and flashing.

C. Locate as indicated by Architect.

D. Mock-ups may remain as part of the Work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes

B. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

C. Comply with insulating-glass manufacturer's written instructions for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

1.09 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.

1.10 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Insulating Glass Units: Provide a ten (10) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including providing products to replace failed units.

C. Laminated Glass: Provide a ten (10) year manufacturer warranty to include coverage for delamination, including providing products to replace failed units.

D. Polycarbonate Sheet Glazing: Provide a ten (10) year manufacturer warranty to include coverage for breakage, coating failure, abrasion resistance, including providing products to replace failed units.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Glass Fabricators:
1. GGI - General Glass International: www.generalglass.com/#sle.
2. JE Berkowitz, LP: www.jeberkowitz.com/#sle.
3. Trulite Glass & Aluminum Solutions, LLC: www.trulite.com/#sle.
4. Viracon, Inc: www.viracon.com/#sle.

B. Float Glass Manufacturers:
1. AGC Glass North America, Inc; _____: www.agcglass.com/#sle.
2. Cardinal Glass Industries; _____: www.cardinalcorp.com/#sle.
3. Guardian Glass, LLC; _____: www.guardianglass.com/#sle.
4. Pilkington North America Inc; _____: www.pilkington.com/na/#sle.
5. Vitro Architectural Glass (formerly PPG Glass); _____: www.vitroglazings.com/#sle.

C. Laminated Glass Manufacturers:
1. Cardinal Glass Industries; _____: www.cardinalcorp.com/#sle.
2. Viracon, Architectural Glass segment of Apogee Enterprises, Inc; _____: www.viracon.com/#sle.
3. Substitutions: See Section 01 6000 - Product Requirements.

D. Plastic Films Manufacturers:
1. Basis of Design: 3M Window Film; Fasara: www.3m.com.
2. Other Acceptable Manufacturers:
   a. Decorative Films; Solyx: www.decorativefilm.com
3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 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:

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.

2.03 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 HS - Heat-Strengthened 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.
   4. 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.

2.04 INSULATING GLASS UNITS

A. Manufacturers:
   1. Glass: Any of the manufacturers specified for float glass.
   2. Substitutions: See Section 01 6000 - Product Requirements.

B. 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.
   8. Capillary Tubes: Provide tubes from air space for insulating glass units without inert type gas that have a change of altitude greater than 2500 feet between point of fabrication and point of installation to permit pressure equalization of air space.
      a. Capillary Tubes: Tubes to remain open and be of length and material type in accordance with insulating glass fabricator's requirements.
      b. Inert gas may be installed in the field into air space in accordance with insulating glass fabricator's and installer's requirements.

C. Type IG-1 - Insulating Glass Units: Safety glazing.
   1. Applications: Exterior glazing unless otherwise indicated.
   2. Space between lites filled with argon.
   3. Outboard Lite: Fully tempered float glass, 1/4 inch thick, minimum.
      a. Tint: Clear.
      b. Coating: Low-E (passive type), on #2 surface.
   4. Inboard Lite: Fully tempered float glass, 1/4 inch thick, minimum.
      a. Tint: Clear.
   5. Total Thickness: 1 inch.
   6. Thermal Transmittance (U-Value), Summer - Center of Glass: 0.38, maximum.
   7. Solar Heat Gain Coefficient (SHGC): 0.39, maximum.

D. Type IG-2 - Insulating Glass Units: Safety glazing, Tinted
   1. Applications:
      a. Clerestory glazing as indicated on drawings.
   2. Space between lites filled with argon.
   3. Glass Type: Same as Type [IG-1] except use gray tint on second surface of glazing using sputter-coating process.

a. Tint: Basis of Design: Solarban 60, Solargray.
4. Total Thickness: 1 inch.
5. Thermal Transmittance (U-Value), Summer - Center of Glass: 0.38, maximum.
6. Visible Light Transmittance (VLT): 35 percent, nominal.
7. Solar Heat Gain Coefficient (SHGC): 0.25, maximum.
8. Visible Light Reflectance, Outside: 6 percent, nominal, Inside: [10] percent, nominal.

2.05 GLAZING UNITS

A. Type FR - Fire-Protection-Rated Glazing: Type, thickness, and configuration of glazing that contains flame, smoke, and does not block radiant heat, as required to achieve fire-doors indicated fire-rating period of 90 minutes or less.

B. Type SG - Security Glazing: Laminated glass, 3-Ply.
1. Applications: Locations as indicated on drawings.
2. Tint: Clear.
3. Thickness: 1/2 inch.
4. Outer Lite: Tempered glass.
5. Interlayer: Polyvinyl butyral (PVB), thickness as required to meet performance criteria.
6. Middle Lite: Tempered glass.
7. Interlayer, Inboard Side : Polyvinyl butyral (PVB), thickness as required to meet performance criteria.
8. Inside Lite: Tempered glass.
9. Performance Criteria:
a. Forced Entry Resistance: Pass ASTM F1233 tests in compliance with Forced Entry Sequence of Testing, Class Achieved 1.2: 1-1/2 inch (4 cm) Diameter Pipe/Sledge, 25 impacts.
10. Glazing Method: As required to meet performance criteria.
11. Manufacturers:
a. Manko Window Systems, Inc; EntryGuard: www.mankowindows.com/#sle.
b. Substitutions: See Section 01 6000 - Product Requirements.

C. Type IG - Insulated Glazing: Laminated glass, 3-ply.
1. Applications: Locations as indicated on drawings.
2. Tint: Clear.
3. Thickness: As required to meet performance criteria.
4. Outside Lite: Heat-strengthened glass.
5. Interlayer, Outboard Side: Polyvinyl butyral (PVB); thickness as required to meet performance criteria.
6. Middle Lite: Heat-strengthened glass.
7. Interlayer, Inboard Side: Polyvinyl butyral (PVB); thickness as required to meet performance criteria.
8. Inside Lite: Heat-strengthened glass.
9. Shading Coefficient: _____, nominal.
10. Solar Heat Gain Coefficient (SHGC): _____, nominal.
11. Visible Light Reflectance, Outside: _____ percent, nominal.
12. Glazing Method: As required to meet performance criteria.

2.06 PLASTIC FILMS

A. Decorative Plastic Film: Vinyl type.
1. Application: Locations as indicated on drawings.
2. Series Type: To be selected by Architect from manufacturer's full range.
3. Color: To be selected by Architect from manufacturer's full range.

2.07 GLAZING COMPOUNDS

A. Silicone Sealant: Single component; neutral curing; capable of water immersion without loss of properties; non-bleeding, non-staining; 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.

B. Manufacturers:
   1. BASF Corporation: www.basf.com/us/en.html.
   2. Bostik Inc: www.bostik-us.com.
   3. Dow Corning Corporation: www.dowcorning.com/construction.
   4. Pecora Corporation: www.pecora.com.
   5. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
   6. Substitutions: See Section 01 6000 - Product Requirements.

2.08 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 Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.

2.09 SOURCE QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

PART 3 EXECUTION

3.01 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. Proceed with glazing system installation only after unsatisfactory conditions have been corrected.

3.02 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.

3.03 INSTALLATION, GENERAL

A. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.

B. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.

C. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.

D. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.

E. 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.

3.04 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.

3.05 INSTALLATION - PLASTIC FILM

A. Install plastic film with adhesive, applied in accordance with film manufacturer's instructions.

B. Place without air bubbles, creases or visible distortion.

C. Install film tight to perimeter of glass and carefully trim film with razor sharp knife. Provide 1/16 inch to 1/8 inch gap at perimeter of glazed panel unless otherwise required. Do not score the glass.

3.06 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.

C. Monitor and report installation procedures and unacceptable conditions.

3.07 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.

3.08 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

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SECTION 09 2116
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Performance criteria for gypsum board assemblies.

B. Metal stud wall framing.

C. Metal channel ceiling framing.

D. Acoustic insulation.

E. Gypsum wallboard.

F. Joint treatment and accessories.

1.02 REFERENCE STANDARDS

A. AISI S100-12 - North American Specification for the Design of Cold-Formed Steel Structural Members; 2012.

B. ANSI A108.11> ANSI A108/A118/A136.1 - American National Standard for Interior of Cementitious Backer Units; 2010 (Revised).

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

D. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017 (Reapproved 2022).

E. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2018.

F. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2023.

G. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2020.

H. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2023.

I. 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; 2022.

J. 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; 2022.

K. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2019.

L. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.

M. ASTM C1629/C1629M - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels; 2023.

N. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.

O. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).

P. ASTM E413 - Classification for Rating Sound Insulation; 2022.

Q. GA-216 - Application and Finishing of Gypsum Panel Products; 2021.

1.03 SUBMITTALS

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

B. Shop Drawings: Indicate special details associated with fireproofing and acoustic seals.

C. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.

D. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.

B. Interior Partitions: Provide completed assemblies with the following characteristics:

C. Fire Rated Assemblies: Provide completed assemblies complying with applicable code.

2.02 METAL FRAMING MATERIALS

A. Non-Loadbearing 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: Hat-shaped sections, minimum depth of 7/8 inch.
   5. Resilient Furring Channels: 1/2 inch depth, for attachment to substrate through one leg only.

B. Shaft Wall Studs and Accessories: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 and specified performance requirements.

C. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.

D. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection using slotted holes, screws and anti-friction bushings, preventing 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 S100-12.
   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-rated head of partition joint systems of fire rating and movement required.
   4. Deflection and Firestop Track:
      a. Provide mechanical anchorage devices as described above that accommodate deflection while maintaining the fire-rating of the wall assembly.

2.03 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:
   1. American Gypsum Company.
   2. CertainTeed Corporation.
   3. LaFarge North America, Inc.
   4. National Gypsum Company.
   5. USG Corporation.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces, unless otherwise indicated.
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
      a. Mold resistant board is required at all locations.
   3. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
   4. Thickness:
      a. Vertical Surfaces: 5/8 inch.

5. Mold Resistant Paper Faced Products:
    a. American Gypsum Company; M-Bloc Type X.
    b. Continental Building Products; Mold Defense Type X.
    c. National Gypsum Company; Gold Bond XP Gypsum Board .
    d. Substitutions: See Section 01 6000 - Product Requirements.

C. Abuse Resistant Wallboard:
1. Application: Offender Restroom Ceilings & all elements of Bulkheads.
2. Surface Abrasion: Level 2, minimum, when tested in accordance with ASTM C1629/C1629M.
3. Indentation: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
4. Soft Body Impact: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
5. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
6. Paper-Faced Type: Gypsum wallboard as defined in ASTM C1396/C1396M.
7. Type: Fire resistance rated Type X, UL or WH listed.
8. Thickness: 5/8 inch.
9. Edges: Tapered.
10. Products:
    a. American Gypsum Company; M-Bloc AR Type X.
    b. Continental Building Products; Protecta AR 100 Type X with Mold Defense.
    c. Georgia-Pacific Gypsum; ToughRock Fireguard X Mold Guard Abuse-Resistant.
    d. National Gypsum Company; Gold Bond Hi-Abuse XP Gypsum Board.
    e. Substitutions: See Section 01 6000 - Product Requirements.

2.04 ACCESSORIES

A. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not use solvent-based non-curing butyl sealant.

B. Beads, Joint Accessories, and Other Trim: ASTM C1047, galvanized steel or rolled zinc, unless noted otherwise.
1. Expansion Joints: V-shaped PVC with tear away fins.

C. Joint Materials: ASTM C475 and as recommended by gypsum board manufacturer for project conditions.
1. Tape: 2 inch wide, coated glass fiber tape for joints and corners, except as otherwise indicated.
2. Ready-mixed vinyl-based joint compound.

D. 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.

E. Abuse Resistant Finishes:
1. Acrylic, water-based, non-textured, high build, tintable primer and surfacer.
2. Products:
    a. Parex USA Inc.; Variance ArmourFill: www.variancefinishes.com.
    b. Substitutions: See Section 01 6000 - Product Requirements.

F. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inch in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion resistant.

G. 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

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 SHAFT WALL INSTALLATION

A. Shaft Wall Framing: Install in accordance with manufacturer's installation instructions.
   1. Install studs at spacing required to meet performance requirements.

B. Shaft Wall Liner: Cut panels to accurate dimension and install sequentially between special friction studs.
   1. Seal perimeter of shaft wall and penetrations with acoustical sealant.

3.03 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.
   3. Install bracing as required at exterior locations to resist wind uplift.

C. Studs: Space studs at 16 inches on center.
   1. Extend partition framing to structure where indicated and to ceiling in other locations maximum spacing.
   2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.
   3. 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.

3.04 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
   1. Place one bead continuously on substrate before installation of perimeter framing members.
   2. Seal around all penetrations by conduit, pipe, ducts, and rough-in boxes, except where firestopping is provided.

3.05 BOARD INSTALLATION

A. Comply with ASTM C 840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Single-Layer Non-Rated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
   1. Exception: Tapered edges to receive joint treatment at right angles to framing.

C. Double-Layer Non-Rated: Use gypsum board for first layer, placed parallel to framing or furring members, with ends and edges occurring over firm bearing. Use glass mat faced gypsum board at exterior walls and at other locations as indicated. Place second layer perpendicular to framing or furring members. Offset joints of second layer from joints of first layer.

D. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.

E. Exposed Gypsum Board in Interior Wet Areas: Seal joints, cut edges, and holes with water-resistant sealant.

F. Cementitious Backing Board: Install over steel framing members and plywood substrate where indicated, in accordance with ANSI A108/A118/A136.1 and manufacturer's instructions.

3.06 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as follows:
   1. Not more than 30 feet apart on walls and ceilings over 50 feet long.

B. Corner Beads: Install at external corners, using longest practical lengths.

C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

3.07 JOINT TREATMENT

A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 5: Walls and ceilings to receive semi-gloss or gloss paint finish and other areas specifically indicated.
   2. Level 1: Fire rated wall areas above finished ceilings, whether or not accessible in the completed construction.

B. 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.

C. Where Level 5 finish is indicated, spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.

END OF SECTION

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SECTION 09 2216
NON-STRUCTURAL METAL FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal partition, ceiling, and soffit framing.

B. Framing accessories.

1.02 RELATED REQUIREMENTS

A. Section 05 2100 - Steel Joists: Execution requirements for anchors for attaching work of this section.

B. Section 05 5000 - Metal Fabrications: Metal fabrications attached to stud framing.

C. Section 06 1000 - Rough Carpentry: Wood blocking within stud framing.

D. Section 07 8400 - Firestopping: Sealing top-of-wall assemblies at fire-resistance-rated walls.

E. Section 07 9200 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.

F. Section 09 2116 - Gypsum Board Assemblies: Acoustic insulation.

1.03 REFERENCE STANDARDS

A. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2018.

B. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2020.

C. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).

D. ASTM E413 - Classification for Rating Sound Insulation; 2022.

1.04 SUBMITTALS

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

B. Shop Drawings:
   1. Indicate prefabricated work, component details, stud layout, framed openings, anchorage to structure, acoustic details, type and location of fasteners, accessories, and items of other related work.
   2. Describe method for securing studs to tracks, splicing, and for blocking and reinforcement of framing connections.

C. Product Data: Provide data describing framing member materials and finish, product criteria, load charts, and limitations.

D. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

E. Sustainable Design Submittal: Documentation of recycled content and location of manufacture.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Member of Steel Stud Manufacturers Association (SSMA): www.ssma.com/#sle.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Framing, Connectors, and Accessories:
   1. CEMCO: www.cemcosteel.com/#sle.
   2. ClarkDietrich: www.clarkdietrich.com/#sle.
   3. Jaimes Industries: www.jaimesind.com/#sle.
   4. SCAFCO Corporation: www.scafco.com/#sle.
   5. Steel Construction Systems: www.steelconsystems.com/#sle.

6. Substitutions: See Section 01 6000 - Product Requirements.

2.02 FRAMING MATERIALS

A. Fire-Resistance-Rated Assemblies: Comply with applicable code and as follows:
   1. Fire Rated Partitions: Listed assembly by UL, No. U419; 1 hour rating.

B. Non-Loadbearing 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 knurled or embossed faces.
   2. Runners: U shaped, sized to match studs.
   3. Ceiling Channels: C shaped.
   4. Furring: Hat-shaped sections, minimum depth of 7/8 inch.

C. Partition Head to Structure Connections: Provide track fastened to structure with legs of sufficient length to accommodate deflection, for friction fit of studs cut short and braced with continuous bridging on both sides. Refer to geotechnical report for movement criteria.

D. Deflection and Firestop Track: Intumescent strip factory-applied to track flanges expands when exposed to heat or flames to provide a perimeter joint seal.

2.03 FABRICATION

A. Fabricate assemblies of framed sections to sizes and profiles required.

B. Fit, reinforce, and brace framing members to suit design requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that rough-in utilities are in proper location.

3.02 INSTALLATION OF STUD FRAMING

A. Comply with requirements of ASTM C754.

B. Extend partition framing to structure where indicated and to ceiling in other locations.

C. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.

D. 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.

E. Align and secure top and bottom runners at 24 inches on center.

F. At partitions indicated with an acoustic rating:
   1. Provide components and install as required to produce STC ratings as indicated, based on published tests by manufacturer conducted in accordance with ASTM E90 with STC rating calculated in accordance with ASTM E413.
   2. Place two beads of acoustic sealant between runners and substrate, studs and adjacent construction.
   3. Place two beads of acoustic sealant between studs and adjacent vertical surfaces.

G. Fit runners under and above openings; secure intermediate studs to same spacing as wall studs.

H. Install studs vertically at spacing indicated on drawings.

I. Align stud web openings horizontally.

J. Secure studs to tracks using crimping method. Do not weld.

K. Fabricate corners using a minimum of three studs.

L. Install double studs at wall openings, door and window jambs, not more than 2 inches from each side of openings.

M. Coordinate erection of studs with requirements of door frames; install supports and attachments.

N. Coordinate installation of bucks, anchors, and blocking with electrical, mechanical, and other work to be placed within or behind stud framing.

O. Furring: Install at spacing and locations shown on drawings. Lap splices a minimum of 6 inches.

3.03 CEILING FRAMING

A. Install furring after work above ceiling is complete. Coordinate the location of hangers with other work.

B. Install furring independent of walls, columns, and above-ceiling work.

C. Securely anchor hangers to structural members or embed them in structural slab. Space hangers as required to limit deflection to criteria indicated. Use rigid hangers at exterior soffits.

D. Securely fix carrying channels to hangers to prevent turning or twisting and to transmit full load to hangers.

E. Place furring channels perpendicular to carrying channels, not more than 2 inches from perimeter walls, and rigidly secure. Lap splices securely.

F. Reinforce openings in suspension system that interrupt main carrying channels or furring channels with lateral channel bracing. Extend bracing minimum 24 inches past each opening.

G. Laterally brace suspension system.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/8 inch in 10 feet.

END OF SECTION

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SECTION 09 3000
TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Tile for floor applications.

B. Ceramic accessories.

C. Ceramic trim.

D. Non-ceramic trim.

1.02 REFERENCE STANDARDS

A. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2017 (Reaffirmed 2022).

B. 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; 2017.

C. ANSI A108.1c - Contractor's Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar; 1999 (Reaffirmed 2021).

D. ANSI A108.2 - American National Standard General Requirements: Materials, Environmental and Workmanship; 2019.

E. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesive or Water Cleanable Tile-Setting Epoxy Adhesive; 2019.

F. ANSI A108.5 - American National Standard Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar; 2021.

G. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grout Epoxy; 1999 (Reaffirmed 2019).

H. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout; 1999 (Reaffirmed 2019).

I. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout; 1999 (Reaffirmed 2019).

J. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 2017 (Reaffirmed 2022).

K. ANSI A108.12 - American National Standard for Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar; 1999 (Reaffirmed 2019).

L. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2005 (Reaffirmed 2021).

M. 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.

N. ANSI A118.3 - American National Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive; 2021.

O. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2014 (Reaffirmed 2019).

P. ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation; 2014 (Reaffirmed 2019).

Q. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2022.

R. 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 (Reapproved 2023).

S. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.

T. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2023.

U. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.

V. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2023.

1.03 SUBMITTALS

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

B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.

C. Shop Drawings: Indicate tile layout, patterns, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.

D. Sample: Provide two (2) samples of selected size, color and texture for approval.

E. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.

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 Tile: 1 percent of each size, color, and surface finish combination.

1.04 QUALITY ASSURANCE

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.06 FIELD CONDITIONS

A. Maintain ambient and substrate temperature above 50 degrees F and below 100 degrees F during installation and curing of setting materials.

PART 2 PRODUCTS

2.01 TILE

A. Manufacturers: All products by the same manufacturer.
1. Dal-Tile Corporation; _____: www.daltile.com/#sle.
2. Substitutions: See Section 01 6000 - Product Requirements.

B. Quarry Tile: ANSI A137.1 standard grade.
1. Moisture Absorption: 0.5 to 3.0 percent as tested in accordance with ASTM C373.
2. Size: 8 by 8 inch, nominal.
3. Thickness: 1/2 inch, nominal.
4. Surface Finish: Non-slip.
5. Color(s): As selected by Architect from manufacturer's full line..
6. Pattern: As indicated on drawings..
7. Trim Units: Matching bullnose, cove, and cove base shapes in sizes coordinated with field tile.
8. Products:
a. Dal-Tile Corporation; Basis of Design: Quarry Textures abrasive surface - Diablo Red 0T01: www.daltile.com/#sle.
b. Metropolitan Ceramics: www.metroceramics.com/#sle.
c. Summitville Tiles, Inc: www.summitville.com/#sle.

d. Substitutions: See Section 01 6000 - Product Requirements.

2.02 TRIM AND ACCESSORIES

A. Ceramic Trim: Matching bullnose, double bullnose, cove base, and cove ceramic shapes in sizes coordinated with field tile.
   1. Applications:
      a. Open Edges: Bullnose.
      b. Inside Corners: Coved.
      c. Floor to Wall Joints: Cove base.
   2. Manufacturers: Same as for tile.

B. Non-Ceramic Trim: Brushed stainless steel, style and dimensions to suit application, for setting using tile mortar or adhesive.
   1. Applications:
      a. Open edges of floor tile.
      b. Transition between floor finishes of different heights.
      c. Expansion and control joints, floor and wall.
   2. Manufacturers:
      a. Schluter-Systems: www.schluter.com/#sle.
      b. Substitutions: See Section 01 6000 - Product Requirements.

2.03 SETTING MATERIALS

A. Provide setting and grout materials from same manufacturer.

B. Manufacturers:
   1. ARDEX Engineered Cements; _____: www.ardexamericas.com/#sle.
   2. Bostik Inc; _____: www.bostik-us.com/#sle.
   3. LATICRETE International, Inc; _____: www.laticrete.com/#sle.
   4. Merkrete, by Parex USA, Inc; _____: www.merkrete.com/#sle.
   5. Substitutions: See Section 01 6000 - Product Requirements.

C. Epoxy Adhesive and Mortar Bond Coat: ANSI A118.3.
   1. Products:
      a. Custom Building Products; EBM-Lite Epoxy Bonding Mortar: www.custombuildingproducts.com/#sle.
      b. LATICRETE International, Inc; LATICRETE LATAPOXY 300 Adhesive: www.laticrete.com/#sle.
      c. Merkrete, by Parex USA, Inc; Merkrete Pro Epoxy: www.merkrete.com/#sle.
      d. Sika Corp; SikaTile 350 Flex Set: www.sika.com/#sle.
      e. Substitutions: See Section 01 6000 - Product Requirements.

2.04 GROUTS

A. Provide setting and grout materials from same manufacturer.

B. Epoxy Grout: ANSI A118.3 chemical resistant and water-cleanable epoxy grout.
   1. Applications: Where indicated.
   2. Color(s): As selected by Architect/Engineer from manufacturer's full line.
   3. Products:
      a. Custom Building Products; CEG-IG 100% Solids Industrial Grade Epoxy Grout: www.custombuildingproducts.com/#sle.
      b. H.B. Fuller Construction Products, Inc; TEC AccuColor EFX Epoxy Special Effects Grout: www.tecspecialty.com/#sle.
      c. MAPEI ; Kerapoxy IEG CQ: www.mapei.com/#sle.
      d. Substitutions: See Section 01 6000 - Product Requirements.

2.05 ACCESSORY MATERIALS

A. Concrete Floor Slab Crack Isolation Membrane: Material complying with ANSI A118.12; not intended as waterproofing.
   1. Crack Resistance: No failure at 1/8 inch gap, minimum.

B. Waterproofing Membrane at Floors as indicated: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.
   1. Crack Resistance: No failure at 1/16 inch gap, minimum; comply with ANSI A118.12.
   2. Fluid or Trowel Applied Type:
      a. Material: Synthetic rubber or Acrylic.
      b. Thickness: 25 mils, minimum, dry film thickness.
      c. Products:
         1) Custom Building Products; RedGard Crack Prevention and Waterproofing Membrane: www.custombuildingproducts.com/#sle.
         2) H.B. Fuller Construction Products, Inc; TEC HydraFlex Waterproofing Crack Isolation Membrane: www.tecspecialty.com/#sle.
         3) Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.

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.

E. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Protect surrounding work from damage.

B. Vacuum clean surfaces and damp clean.

C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

3.03 INSTALLATION - GENERAL

A. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.

B. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor and base joints.

C. 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.

D. Form internal angles coved and external angles bullnosed with coinciding trim units. Mitered corners are not acceptable.

E. Install non-ceramic trim in accordance with manufacturer's instructions.

F. Sound tile after setting. Replace hollow sounding units.

G. Keep control and expansion joints free of mortar, grout, and adhesive.

H. Prior to grouting, allow installation to completely cure; minimum of 48 hours.

I. Grout tile joints unless otherwise indicated.

J. 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.

3.04 INSTALLATION - FLOORS - THIN-SET METHODS

A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F113, dry-set or latex-Portland cement bond coat, with standard grout, unless otherwise indicated.
   1. Where waterproofing membrane is indicated, install in accordance with TCNA (HB) Method <>.
   2. Where epoxy or furan grout is indicated, but not epoxy or furan bond coat, install in accordance with TCNA (HB) Method F115.

3.05 INSTALLATION - FLOORS - MORTAR BED METHODS

A. Mortar Bed Thickness: 5/8 inch, unless otherwise indicated.

3.06 CLEANING

A. Clean tile and grout surfaces.

3.07 PROTECTION

A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION

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SECTION 09 5100
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Suspended metal grid ceiling system.

B. Acoustical units.

1.02 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; 2023.

B. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

C. ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2022.

D. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2019.

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; 2022.

F. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2023.

G. ISO 14644-1 - Cleanrooms and Associated Controlled Environments - Part 1: Classification of Air Cleanliness by Particle Concentration; 2015.

H. UL (FRD) - Fire Resistance Directory; Current Edition.

1.03 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.

B. Do not install acoustical units until after interior wet work is dry.

1.04 SUBMITTALS

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

B. Product Data: Provide data on suspension system components and acoustical units.

C. Samples: Submit two samples 6 by 6 inch in size illustrating material and finish of acoustical units.

D. Samples: Submit two samples each, 6 inches long, of suspension system main runner and perimeter molding.

E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

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 Acoustical Units of each type: Quantity equal to 5 percent of total installed.

1.05 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

2.01 MANUFACTURERS

A. Acoustic Tiles/Panels:
   1. Armstrong World Industries, Inc: www.armstrong.com.
   2. Acoustic Ceiling Products, Inc: www.acpideas.com/#sle.

3. CertainTeed Corporation: www.certainteed.com/#sle.
4. USG Corporation: www.usg.com/ceilings/#sle.
5. Substitutions: See Section 01 6000 - Product Requirements.

B. Suspension Systems:
1. Same as for acoustical units.

2.02 ACOUSTICAL UNITS

A. Acoustical Units - General: ASTM E1264, Class A.

B. Source Limitations: Obtain each type of acoustical ceiling panel and supporting suspension system from single source from single manufacturer

C. Acoustical Tile Type ACT-1 (Typical): Painted mineral fiber,ASTM E1264 Type III, with the following characteristics:
1. Size: 24 by 24 inches.
2. Thickness: 5/8 inches.
3. Light Reflectance: 0.83 percent, determined in accordance with ASTM E1264.
4. NRC Range: Not less than 0.55, determined in accordance with ASTM E1264.
5. Ceiling Attenuation Class (CAC): 33, determined in accordance with ASTM E1264.
6. Edge: Square.
7. Products:
a. Basis-of-Design Product: USG; Radar. .
b. Or comparable from listed manufacturers meeting Basis of Design specifications.
c. Substitutions: See Section 01 6000 - Product Requirements.

D. Acoustical Tile Type ACT-2 (Washable): Coated mineral fiber, ASTM E1264 Type IV, with the following characteristics:
1. Size: 24 by 24 inches.
2. Thickness: 5/8 inches.
3. Light Reflectance: 0.89 percent, determined in accordance with ASTM E1264.
4. Ceiling Attenuation Class (CAC): 33, determined in accordance with ASTM E1264.
5. Joint: Reveal sized to fit flange of exposed suspension-system members..
6. Edge: Square.
7. Surface Color: White.
8. Surface Pattern: Smooth.
9. Products:
a. Basis-of-Design Product: Armstrong World Industries, Inc. Kitchen Zone.
b. Or comparable from listed manufacturers meeting Basis of Design specifications.
c. Substitutions: See Section 01 6000 - Product Requirements.

2.03 SUSPENSION SYSTEM(S)

A. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, stabilizer bars, clips, and splices as required.
1. Materials:
a. Steel Grid: ASTM A653/A653M, G30 coating, unless otherwise indicated.
b. Aluminum Grid: Aluminum sheet, ASTM B209/B209M.

B. Exposed Suspension System, Type 2: Aluminum grid and cap; factory-applied closed-cell foam gaskets.
1. Structural Classification: Light-duty, when tested in accordance with ASTM C635/C635M.
2. Clean Room Classification: ISO 14644-1, Class 5.
3. Profile: Tee; 15/16 inch face width.
4. Finish: Baked enamel.
5. Products:
a. Substitutions: See Section 01 6000 - Product Requirements.

C. Exposed Suspension System, Type 1: Hot-dipped galvanized steel grid and cap.

1. Structural Classification: Intermediate-duty, when tested in accordance with ASTM C635/C635M.
2. Profile: Tee; 15/16 inch face width.
3. Finish: Baked enamel.
4. Products:
   a. USG Corporation; Donn Brand DX/DXL 15/16 inch Acoustical Suspension System: www.usg.com/ceilings/#sle.
   b. Substitutions: See Section 01 6000 - Product Requirements.

2.04 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. Perimeter Moldings: Same metal and finish as grid.
   1. Size: As required for installation conditions and specified Seismic Design Category.
   2. Angle Molding: L-shaped, for mounting at same elevation as face of grid.

D. Touch-up Paint: Type and color to match acoustical and grid units.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that layout of hangers will not interfere with other work.

3.02 PREPARATION

A. Install after major above-ceiling work is complete.

B. Coordinate the location of hangers with other work.

3.03 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.

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.

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.

3.04 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. Lay directional patterned units with pattern parallel to longest room axis.

D. Fit border trim neatly against abutting surfaces.

E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.

F. Cutting Acoustical Units:
   1. Make field cut edges of same profile as factory edges.

3.05 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.

END OF SECTION

SECTION 09 9123
INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
   1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
   2. Mechanical and Electrical:
      a. In finished areas, paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.
      b. In finished areas, paint shop-primed items.

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. Stainless steel, anodized aluminum, bronze, terne-coated stainless steel, and lead items.
   6. Floors, unless specifically indicated.
   7. Ceramic and other tiles.
   8. Glass.
   9. Acoustical materials, unless specifically indicated.
   10. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

A. Section 05 5000 - Metal Fabrications: Shop-primed items.

B. Section 05 5100 - Metal Stairs: Shop-primed items.

C. Section 09 9113 - Exterior Painting.

D. Section 09 9600 - High-Performance Coatings.

1.03 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.

B. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; Current Edition.

C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

D. SSPC V1 (PM1) - Good Painting Practice: Painting Manual Volume 1; 2016.

E. SSPC V2 (PM2) - Systems and Specifications: Steel Structures Painting Manual Volume 2; 2021.

F. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).

G. SSPC-SP 2 - Hand Tool Cleaning; 2018.

H. SSPC-SP 3 - Power Tool Cleaning; 2018.

I. SSPC-SP 6 - Commercial Blast Cleaning; 2007.

J. SSPC-SP 13 - Surface Preparation of Concrete; 2018.

1.04 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. MPI product number (e.g., MPI #47).
   3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.

C. Samples: Submit three 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, discuss sheen options with Architect/Engineer before preparing samples, to eliminate sheens not required.
   3. Allow 30 days for approval process, after receipt of complete samples by Architect/Engineer.
   4. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as masonry, have been approved.

D. Manufacturer's Instructions: Indicate special surface preparation procedures.

E. Maintenance Data: Submit data including product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

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 Paint and Finish Materials: Fuurnish an additional 5 percent, but not less than 1 gallon of each color; from the same product run, store where directed.
   3. Label each container with color in addition to the manufacturer's label.

1.05 QUALITY ASSURANCE

A. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.07 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply materials when relative humidity exceeds 85 percent, at temperatures less than 5 degrees F above the dew point, or to damp or wet surfaces.

D. Minimum Application Temperatures for Paints: 50 degrees F for interiors unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes from the same manufacturer to the greatest extent possible.

B. Paints:
   1. Basis of Design Manufacturer: Sherwin-Williams Company: www.sherwin-williams.com or system matching performance and product information for the basis of design product identified below.
      a. Diamond Vogel Paints: www.diamondvogel.com/#sle.
      b. PPG Paints: www.ppgpaints.com/#sle.

C. Primer Sealers: Same manufacturer as top coats.

D. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless intended to be a field-catalyzed paint.
   1. Where MPI paint numbers are specified, provide products listed in Master Painters Institute Approved Product List, current edition available at www.paintinfo.com, for specified MPI categories, except as otherwise indicated.
   2. 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.
   3. 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.
   4. Supply each paint material in quantity required to complete entire project's work from a single production run.
   5. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content:
   1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
      a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
      b. Architectural coatings VOC limits of the State in which the Project is located.
   2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

C. Flammability: Comply with applicable code for surface burning characteristics.

D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect/Engineer from the manufacturer's full line.

E. Colors: As indicated on drawings.
   1. Extend colors to surface edges; colors may change at any edge as directed by Architect/Engineer.
   2. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling under which they are mounted.
   3. In utility areas, finish equipment, piping, conduit, and exposed duct work in colors according to the color coding scheme indicated.

2.03 PAINT SYSTEMS - INTERIOR

A. Concrete , Opaque, Latex, 3 Coat:
   1. One coat of latex primer; A24W8300 Loxon Concrete And Masonry Interior/Exterior Latex Primer .
   2. Eggshell: Two coats of B20W04651 ProMar 400 Zero VOC Interior Latex Egg-Shell.

B. Ferrous Metals, Unprimed, Alkyd, 3 Coat:
   1. One coat of alkyd primer.
   2. Semi-gloss: Two coats of alkyd enamel; B53W01151 Pro Industrial Water-Based Alkyd Urethane Semi-Gloss.

C. Ferrous Metals, Primed, Alkyd, 2 Coat:
   1. Touch-up with alkyd primer.
   2. Semi-gloss: Two coats of alkyd enamel; B53W01151 Pro Industrial Water-Based Alkyd Urethane Semi-Gloss.

D. Galvanized Metals, Alkyd, 3 Coat:
   1. One coat galvanize primer.
   2. Semi-gloss: Two coats of alkyd enamel; B53W01151 Pro Industrial Water-Based Alkyd Urethane Semi-Gloss.

E. Gypsum Board/Plaster, Latex, 3 Coat:
   1. One coat of latex primer sealer; B28W2600 ProMar 200 Zero VOC Interior Latex Primer.
   2. Eggshell: Two coats of latex enamel; B20W12651 ProMar 400 Zero VOC Interior Latex Eg-Shel .

2.04 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin application of paints and finishes until substrates have been adequately prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

D. Test shop-applied primer for compatibility with subsequent cover materials.

E. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:
   1. Gypsum Wallboard: 12 percent.
   2. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
   3. Concrete Floors and Traffic Surfaces: 8 percent.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or 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.

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.
   2. Prepare surface as recommended by top coat manufacturer and according to SSPC-SP 13.

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. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.

L. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.

M. Ferrous Metal:
   1. Solvent clean according to SSPC-SP 1.
   2. 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.

N. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

C. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

D. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

E. Apply each coat to uniform appearance in thicknesses specified by manufacturer.

F. Sand wood and metal surfaces lightly between coats to achieve required finish.

G. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

H. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

3.06 SCHEDULE - PAINT SYSTEMS

A. Concrete, Concrete Masonry Units (CMU), Concrete Block, Brick Masonry: Finish surfaces exposed to view.

B. Gypsum Board: Finish surfaces exposed to view.
   1. Interior Walls, Ceilings and Soffits:
      a. Prime Coat(s): Primer Sealer, Latex, MPI #50.
         1) Sherwin Williams, B28W04600 ProMar 400 Zero VOC Interior Latex Primer
      b. Intermediate Coat: Latex, Interior matching topcoat.
      c. Top Coat: Latex, Interior Eggshell, (Gloss Level 3)
         1) Sherwin Williams, B20W12651 ProMar 400 Zero VOC Interior Latex Eg-Shel

d. Locations: General use, U.N.O.

2. Interior Walls:
   a. Prime Coat(s): Primer Sealer, Latex, MPI #50.
      1) Sherwin Williams, B28W04600 ProMar 400 Zero VOC Interior Latex Primer
   b. Intermediate Coat: Latex, Interior matching topcoat.
   c. Top Coat: Latex, Interior Semi-Gloss, (Gloss Level 5)
      1) Sherwin Williams, B20W12651 ProMar 400 Zero VOC Interior Latex Eg-Shel
   d. Locations: Areas with plumbing fixtures and high use areas including, but not limited to, maintenance, mechanical, janitor, electrical, storage, entry/vestibule, stairwells, exam, procedure, toilet rooms, medical supply/records, red bag, receiving and laboratory.

C. Steel Doors and Frames: Finish surfaces exposed to view.
   1. Prime Coat:
      a. Sherwin Williams, Pro Industrial Pro-Cryl Universal Metal Primer, B66-310 Series.
   2. Intermediate Coat: Latex interior, institutional low-odor/VOC, matching topcoat.
   3. Top Coat:
      a. Sherwin Williams, B53W01151 Pro Industrial Water-Based Alkyd Urethane, Semi-Gloss.

END OF SECTION

SECTION 09 9600
HIGH-PERFORMANCE COATINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. High performance coatings.

B. Surface preparation.

1.02 REFERENCE STANDARDS

A. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2023.

B. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; Current Edition.

C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

D. SSPC-Paint 16 - Coal Tar Epoxy Polyamide, Black (or Dark Red) Coating; 2006, with Editorial Revision (2015).

E. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).

F. SSPC-SP 6 - Commercial Blast Cleaning; 2007.

G. SSPC-SP 13 - Surface Preparation of Concrete; 2018.

1.03 SUBMITTALS

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

B. Product Data: Provide complete list of all 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 coating system(s) product is to be used in; include description of each system.
   4. Manufacturer's installation instructions.

C. Samples: Submit two samples 8 by 8 inch in size illustrating colors available for selection.

D. Maintenance Data: Include cleaning procedures and repair and patching techniques.

E. 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 Coating Materials: 1 gallon of each type and color.
   3. Label each container with manufacturer's name, product number, color number, and room names and numbers where used.

1.04 MOCK-UPS

A. See Section 01 4000 - Quality Requirements for general requirements for mock-ups.

B. Provide mock-up , 4 feet long by 4 feet wide, illustrating coating , for each specified coating.

C. Locate where directed.

D. Mock-up may remain as part of the work.

1.05 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 coating, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Coating 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.

1.06 FIELD CONDITIONS

A. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

B. Do not install materials when temperature is below 55 degrees F or above 90 degrees F.

C. Maintain this temperature range, 24 hours before, during, and 72 hours after installation of coating.

D. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

E. Restrict traffic from area where coating is being applied or is curing.

1.07 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Warranty: Include coverage for bond to substrate.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide high performance coating products from the same manufacturer to the greatest extent possible.
   1. In the event that a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect/Engineer is obtained using the specified procedures for substitutions.

B. High-Performance Coatings:
   1. Dow: www.dow.com/#sle.
   2. PPG Paints: www.ppgpaints.com/#sle.
   3. Precision Coatings: www.precisioncoatingsinc.com/#sle.
   4. Sika Corporation: www.sikafloorusa.com/#sle.
   5. Sherwin-Williams Company: www.protective.sherwin-williams.com/industries/#sle.
   6. Tnemec Company, Inc: www.tnemec.com/#sle.
   7. Prime Coat.
   8. Substitutions: Section 01 6000 - Product Requirements.

2.02 HIGH-PERFORMANCE COATINGS

A. MPI Standards: Provide products that comply with MPI standards indicated and are listed in MPI Approved Products List.

2.03 TOP COAT MATERIALS

A. Coatings - General: Provide complete multi-coat systems formulated and recommended by manufacturer for the applications indicated, in the thicknesses indicated; number of coats specified does not include primer or filler coat.

B. Latex Coating for Gypsum Boards materials.:
   1. Number of Coats: Two.
   2. Top Coat(s): Latex, Interior, High Performance ArchitecturalMPI#43.
      a. Sheen: Semi-Gloss.

C. Epoxy Coating for Doors:
   1. Number of coats: Two.
   2. Product Characteristics:
      a. Percentage of solids by volume, ____, minimum.
   3. Top Coat(s): Polyamide Epoxy; MPI #77, #177.
      a. Sheen: Gloss.
   4. Top Coat(s): High Performance Institutional, Two-Component, Water Based Epoxy Coating; MPI #252, #254, #255, #256.

D. High-Build Epoxy Coating for Interior Walls:
   1. Number of Coats: Two.

2. Top Coat(s): Epoxy, High-Build; MPI#77.
   a. Sheen: Gloss.
3. Primer: As recommended by coating manufacturer for specific substrate.

E. Coal Tar Epoxy Coating:
1. Number of Coats: One.
2. Product characteristics:
   a. Comply with the performance requirements specified above for moderate corrosive exposure.
3. Top Coat(s) : Coal Tar Polyamide Epoxy, Two-Component, SSPC-Paint 16.
   a. Sheen: Semi-Gloss.
   b. Products:
      1) PPG Paints; Amercoat 78HB Coal Tar Epoxy, AT 78HB Series: www.ppgpaints.com/#sle.
      2) Substitutions: Section 01 6000 - Product Requirements.
4. Primer: As recommended by coating manufacturer for specific substrate.

F. Shellac: Pure, white type.

2.04 PRIMERS

A. Primers: Provide the following unless other primer is required or recommended by coating manufacturer.
1. Primer Sealer, Latex, Interior; MPI #50.
   a. Products:
      1) PPG Paints; Pure Performance Interior Latex Primer, 9-900; www.ppgpaints.com/#sle. (MPI #50)
      2) Sherwin-Williams; ProMar 200 Zero VOC Interior Latex Primer: www.protective.sherwin-williams.com/#sle. (MPI #50)
      3) Substitutions: Section 01 6000 - Product Requirements.
2. Block Filler, Epoxy; MPI #116.
   a. Products:
      1) PPG Paints; Amerlock 400 Epoxy Block Filler, 400BF: www.ppgpaints.com/#sle.
      2) Substitutions: Section 01 6000 - Product Requirements.
3. Primer Sealer for Cementitious Substrates, Water Based Epoxy.
   a. Products:
      1) PPG Paints Aquapon WB EP Two-Component Waterborne Epoxy Primer, 98E-46/98E-99 Series: www.ppgpaints.com/#sle.
      2) Tnemec Company, Inc; Series 151 Elasto-Grip FC: www.tnemec.com/#sle.
      3) Substitutions: Section 01 6000 - Product Requirements.
4. Anti-Corrosive for Metal, Epoxy; MPI #101.
   a. Products:
      1) PPG Paints; Amerlock 400 Epoxy, Semi-Gloss, AK-400 Series: www.ppgpaints.com/#sle.
      2) Rust-Oleum Corporation; META Prime Epoxy Primer: www.rustoleum.com/#sle.
      3) Substitutions: Section 01 6000 - Product Requirements.

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of coated surfaces.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Do not begin application of coatings until substrates have been properly prepared.

C. Verify that substrate surfaces are ready to receive work as instructed by the coating manufacturer. Obtain and follow manufacturer's instructions for examination and testing of

substrates.

D. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

E. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.

F. Masonry: Verify masonry joints are tooled.

3.02 PREPARATION

A. Protect adjacent surfaces and materials not receiving coating from spatter and overspray; mask if necessary to provide adequate protection. Repair damage.

B. Clean surfaces of loose foreign matter.

C. Remove substances that would bleed through finished coatings. If unremovable, seal surface with shellac.

D. Remove finish hardware, fixture covers, and accessories and store.

E. 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.
   2. Clean concrete according to ASTM D4258. Allow to dry.
   3. Prepare surface as recommended by coating manufacturer and according to SSPC-SP 13.

F. 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 coating manufacturer.

G. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.

H. Ferrous Metal:
   1. Solvent clean according to SSPC-SP 1.
   2. 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", and protect from corrosion until coated.

3.03 PRIMING

A. Apply primer to all surfaces, unless specifically not required by coating manufacturer. Apply in accordance with coating manufacturer's instructions.

B. Concrete: Prior to priming, patch with masonry filler to produce smooth surface.

C. Concrete Masonry: Apply masonry filler to thickness required to fill holes and produce smooth surface; minimum thickness of 30 mils.

3.04 COATING APPLICATION

A. Apply coatings in accordance with manufacturer's written instructions, to thicknesses specified and recommendations in MPI - Architectural Painting and Specification Manual.

B. Apply in uniform thickness coats, without runs, drips, pinholes, brush marks, or variations in color, texture, or finish. Finish edges, crevices, corners, and other changes in dimension with full coating thickness.

3.05 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for general requirements for field inspection.

3.06 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

B. Clean surfaces immediately of overspray, splatter, and excess material.

C. After coating has cured, clean and replace finish hardware, fixtures, and fittings previously removed.

3.07 PROTECTION

A. Protect finished work from damage.

3.08 SCHEDULE

A. Colors: As selected by Architect from Manufacturer's standard line.

B. Walls in Kitchens & Kitchen Accessory spaces, Laundry Rooms, Corridors, Toilet Rooms, Janitor Closets: High-build epoxy, gloss.

C. Galvanized Metal Doors: High-build epoxy, gloss

D. Interior Ferrous Metal Doors: Epoxy, gloss, shop-applied after cleaning to bare metal, all surfaces coated including surfaces to be concealed or embedded in concrete.

E. Steel Lintels to be Embedded in Concrete and Masonry: Coal tar epoxy coating, shop-applied, all surfaces.

END OF SECTION

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SECTION 10 1401
CODE-REQUIRED SIGNAGE

PART 1 GENERAL

1.01 SCOPE

A. Signage listed in this section to be furnished and installed by Contractor, unless noted otherwise.

1.02 SECTION INCLUDES

A. Fire and smoke partition identification (Contractor to provide).

B. Fire and smoke damper access identification (Contractor to provide).

C. Emergency evacuation maps.

1.03 SECTION EXCLUDES

A. Illuminated exit signs.

B. Site and parking signs.

C. Identification for plumbing piping and equipment.

D. Identification for electrical systems.

E. Signage provided by elevator manufacturer.

F. Luminous egress path marking and other "glow-in-the-dark" signs.

1.04 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 - 2010 ADA Standards for Accessible Design; 2010.

C. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

D. IAC - Illinois Accessibility Code; 2018.

1.05 SUBMITTALS

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

B. 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.

1.06 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

2.01 SIGNAGE APPLICATIONS

A. Fire and Smoke Partition Identification:
   1. Contractor to provide.
   2. Provide permanent identification, via signs or stenciling, on all fire walls, fire barriers, fire partitions, smoke barriers, and smoke partitions or any other wall required to have protected openings or penetrations. Such identification shall:
      a. Be located in accessible concealed floor, floor-ceiling, or attic spaces.
      b. Be located within 15 feet of the end of each wall and at intervals not exceeding 30 feet measured horizontally along the wall or partition.
      c. Include lettering not less than 3 inches in height with a minimum 3/8 inch stroke in a contrasting color incorporating the suggested wording "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS".

B. Fire and Smoke Damper Access Identification:
   1. Contractor to provide.

2. Provide permanent identifications on exterior of all access points to fire and smoke dampers.
3. Label to have letters not less than 1/2 inch in height stating "FIRE/SMOKE DAMPER", "SMOKE DAMPER", or "FIRE DAMPER" as applicable.

C. Rooms containing controls for A/C systems, sprinkler risers and valves, or other fire detection, suppression elements shall be identified for use by the Fire Department.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install neatly, with horizontal edges level.

C. Protect from damage until Substantial Completion; repair or replace damaged items.

END OF SECTION

SECTION 10 2600
WALL AND DOOR PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Corner guards.

B. Door and frame protection.

1.02 REFERENCE STANDARDS

A. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics; 2023, with Editorial Revision.

B. ASTM D543 - Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents; 2021.

C. ASTM F476 - Standard Test Methods for Security of Swinging Door Assemblies; 2023.

1.03 SUBMITTALS

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

B. Product Data: Indicate physical dimensions, features, wall mounting brackets with mounted measurements, anchorage details, and rough-in measurements.

C. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.04 DELIVERY, STORAGE, AND HANDLING

1.05 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide 5-year manufacturer warranty for metal crash rails. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Door, Frame, and Knob/Lever Protection:
   1. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PERFORMANCE CRITERIA

A. Impact Strength: Unless otherwise noted, provide protection products and assemblies that have been successfully tested for compliance with applicable provisions of ASTM D256 and/or ASTM F476.

B. Chemical and Stain Resistance: Unless otherwise noted, provide protection products and assemblies with chemical and stain resistance complying with applicable provisions of ASTM D543.

2.03 PRODUCT TYPES

A. Corner Guards - Surface Mounted:
   1. Material: Type 304 stainless steel, No. 4 finish, 12 gauge, _____ inch thick.
   2. Width of Wings: 2 inches.
   3. Corner: Square.
   4. Color: As selected from manufacturer's standard colors.
   5. Length: One piece.

B. Mounting Brackets and Attachment Hardware: Appropriate to component and substrate with tamperproof screws.

2.04 FABRICATION

A. Fabricate components with tight joints, corners and seams.

B. Form end trim closure by capping and finishing smooth.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that rough openings, concealed blocking, and anchors are correctly sized and located.

B. Verify that field measurements are as indicated on drawings.

3.02 INSTALLATION

A. Position corner guard 4 inches above finished floor to ____ inches high.

B. Position corner guard to extend across entire gypsum board bulkhead exposed outside corner.

3.03 TOLERANCES

3.04 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

1.01 SECTION INCLUDES

A. Commercial toilet accessories.

B. Institutional ligature-resistant toilet accessories.

C. Under-lavatory pipe supply covers.

D. Utility room accessories.

1.02 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2022.

C. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2023.

D. ASTM C1036 - Standard Specification for Flat Glass; 2021.

E. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.

F. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).

G. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.03 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.

C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

D. CLOSEOUT SUBMITTALS
   1. Maintenance Data: For toilet, shower, and bath accessories to include in maintenance manuals.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Commercial Toilet, Shower, and Bath Accessories:
   1. Subject to compliance with requirements, provide product indicated as Basis of Design or comparable product by one of the following:
      a. AJW Architectural Products: www.ajw.com.
      b. American Specialties, Inc: www.americanspecialties.com.
      c. Bobrick Washroom Equipment, Inc.: www.bobrick.com.
      d. Bradley Corporation: www.bradleycorp.com.
      e. Georgia-Pacific Professional: www.blue-connect.com.
      f. Substitutions: Section 01 6000 - Product Requirements.

B. Institutional Security and Ligature-Resistant Toilet and Bath Accessories:
   1. American Specialties, Inc; _____: www.americanspecialties.com/#sle.
   2. Whitehall Manufacturing; _____: www.whitehallmfg.com/#sle.
   3. Substitutions: Section 01 6000 - Product Requirements.

C. Under-Lavatory Pipe Supply Covers:
   1. Plumberex Specialty Products, Inc; _____: www.plumberex.com/#sle.
   2. Substitutions: Section 01 6000 - Product Requirements.

D. All items of each type to be made by the same manufacturer. Bariatric grab bars may be from different manufacturers based on availability of products.

2.02 MATERIALS

A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.

B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative

C. Stainless Steel Sheet: ASTM A666, Type 304.

D. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.

E. Mirror Glass: Tempered safety glass, ASTM C1048; and ASTM C1036 Type I, Class 1, Quality Q2, with silvering as required.

F. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.

2.03 FINISHES

A. Stainless Steel: Satin finish, unless otherwise noted.

2.04 COMMERCIAL TOILET ACCESSORIES

A. [T4] Toilet Paper Dispenser: Jumbo single roll, surface mounted, with lock and key.
   1. Cover: Transparent, Smoke
   2. Products:
      a. Basis of Design: Uline; H-1127.
      b. Substitutions: Section 01 6000 - Product Requirements.

B. Paper Towel Dispenser [T5]: Folded paper type, stainless steel, surface-mounted, with viewing slots on sides as refill indicator and tumbler lock.
   1. Capacity: 300 C-fold minimum.
   2. Products:
      a. AJW Architectural Products; ____: www.ajw.com/#sle.
      b. American Specialties, Inc; _____: www.americanspecialties.com/#sle.
      c. Substitutions: Section 01 6000 - Product Requirements.

C. [T6] (OFCI) Soap Dispenser: Liquid soap dispenser, wall-mounted, surface, with _____ cover and horizontal stainless steel tank and working parts; push type soap valve, check valve, and window gage refill indicator, tumbler lock and drip tray.
   1. Minimum Capacity: 48 ounces.
   2. Products:
      a. Prime Source; TBD with shield..
      b. Substitutions: Section 01 6000 - Product Requirements.

D. [T7] Mirrors: Stainless steel framed, 1/4 inch thick tempered safety glass; ASTM C1048.
   1. Size: 24" x 36".
   2. Frame: 0.05 inchangle shapes, with mitered and welded and ground corners, and tamperproof hanging system; satin finish.
   3. Products:
      a. AJW Architectural Products; ____: www.ajw.com/#sle.
      b. American Specialties, Inc; _____: www.americanspecialties.com/#sle.
      c. Basis of Desgn: Bobrick; B-165 2436.
      d. Substitutions: Section 01 6000 - Product Requirements.

E. Grab Bars, Typical [T1, T2, : Stainless steel, nonslip grasping surface finish.
   1. [T-T9] 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, concealed flange mounting, 1-1/2 inch clearance between wall and inside of grab bar.
      c. Finish: Smooth, No. 4 finish (satin) on ends and slip-resistant texture in grip area.

d. Length and Configuration: As indicated on drawings.
e. Basis of Design Products:
   1) [T1] Bobrick; B-5806.99 x 42
   2) [T2] Bobrick; B-5806.99 x 36
   3) [T3] Bobrick; B-5806.99 x 18
   4) Substitutions: Section 01 6000 - Product Requirements.
f. Products:
   1) AJW Architectural Products: www.ajw.com/#sle.
   2) American Specialties, Inc: www.americanspecialties.com/#sle.
   3) Standard Metal Hardware Manufacturing, Ltd; Grab Bars: www.smhardware.com/#sle.
   4) Substitutions: Section 01 6000 - Product Requirements.

2.05 INSTITUTIONAL SECURITY AND LIGATURE-RESISTANT TOILET AND BATH ACCESSORIES

A. Toilet Paper Holder [ST4]: Single roll, surface-mounted unit with beveled wall flange, satin finish stainless steel, spring-loaded spindle button type for standard toilet paper rolls. Install with tamper-resistant screws.

B. Paper Towel Holder [ST5]: Folded paper type, single bay, satin finish stainless steel, surface-mounted, with open bays as refill indicators. Install with tamper-resistant screws.
   1. Capacity: 250 C-fold minimum per bay.

C. Grab Bars [ST1-ST3]: Type 304 stainless steel, smooth surface with closure plate.
   1. Standard Duty Grab Bars:
      a. Push/Pull Point Load: 250 pound-force, minimum.
      b. Dimensions: 1-1/2 inch outside diameter, minimum 0.05 inch wall thickness, 1-1/2 inch clearance between wall and inside of grab bar; 14 gauge stainless steel "L" shaped closure plate with wall mounting flange welded to bottom of tube to prevent ligature. Install grab bar and closure plate with tamper-resistant screws through grab bar circular mounting flange and wall flange of flat closure.
      c. Finish: Satin.
      d. Length and Configuration: As indicated on drawings.

2.06 UNDER-LAVATORY PIPE AND SUPPLY COVERS

A. [T9] Under-Lavatory Pipe and Supply Covers:
   1. Insulate exposed drainage piping, including hot, cold, and tempered water supplies under lavatories or sinks to comply with ADA Standards.
   2. Exterior Surfaces: Smooth non-absorbent, non-abrasive surfaces.
   3. Construction: 1/8 inch flexible PVC.
      a. Surface Burning Characteristics: Self extinguished 0 sec (ATB), 0 mm (AEB) when tested in accordance with ASTM-D-635.
      b. Comply with ICC A117.1.
      c. Microbial and Fungal Resistance: Comply with ASTM G21.
   4. Color: White.
   5. Fasteners: Reusable, snap-locking fasteners with no sharp or abrasive external surfaces.
   6. Products:
      a. Plumberex Specialty Products, Inc; Plumberex Handy-Shield Maxx: www.plumberex.com/#sle.
      b. Basis of Design: Truebro; Lav Guard 2.
      c. Substitutions: See Section 01 6000 - Product Requirements.

2.07 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. Drying rod: Stainless steel, 1/4 inch diameter.
   2. Hooks: 5, 0.06 inch stainless steel rag hooks at shelf front.
   3. Mop/broom holders: Three spring-loaded rubber cam holders at shelf front.

4. Length: Manufacturer's standard length for number of holders/hooks.
5. Products:
   a. American Specialties, Inc: www.americanspecialties.com/#sle.
   b. Substitutions: 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify exact location of accessories for installation.

3.02 PREPARATION

A. Deliver inserts and rough-in frames to site for timely installation.

B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION

A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.

B. Install plumb and level, securely and rigidly anchored to substrate.

C. Wall backing: Install concealed wall backing as required to support each item.

D. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.

3.04 PROTECTION

A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION

SECTION 10 4400
FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire extinguisher cabinets.

B. Fire extingusihers are to be owner furnished / contractor installed.

1.02 REFERENCE STANDARDS

A. FM (AG) - FM Approval Guide; Current Edition.

B. NFPA 10 - Standard for Portable Fire Extinguishers; 2022.

C. UL (DIR) - Online Certifications Directory; Current Edition.

1.03 SUBMITTALS

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

B. Product Data: Provide color and finish and installation instructions.

C. Shop Drawings: Indicate locations of cabinets and cabinet physical dimensions.

D. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fire Extinguishers:
   1. Activar Construction Products Group, Inc. - JL Industries: www.activarcpg.com/#sle.
   2. Oval Brand Fire Products: www.ovalfireproducts.com/#sle.
   3. Substitutions: See Section 01 6000 - Product Requirements.

B. Fire Extinguisher Cabinets and Accessories:
   1. Activar Construction Products Group, Inc. - JL Industries; Security Series: www.activarcpg.com/#sle.
   2. Larsen's Manufacturing Co: www.larsensmfg.com/#sle.
   3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 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) or FM (AG) 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: 2.5 pound.
   3. Temperature range: Minus 40 degrees F to ___ degrees F.

C. Dry Chemical Type Fire Extinguishers: Stainless steel tank, with pressure gauge.
   1. Class: K type.
   2. Size: 1.6 gallons.
   3. Temperature range: Minus 20 degrees F to 120 degrees F.

2.03 FIRE EXTINGUISHER CABINETS

A. Cabinet Construction: Non-fire rated.

B. Cabinet Configuration: Recessed, and surface mounted type as indicated on drawings.
   1. Size to accommodate accessories.
   2. Project trim with rolled edge

C. Door: 0.036 inch metal thickness, reinforced for flatness and rigidity with roller type catch. Hinge doors for 180 degree opening with two butt hinge.

D. Cabinet Mounting Hardware: Appropriate to cabinet, with pre-drilled holes for placement of anchors.

E. Fabrication: Weld, fill, and grind components smooth.

F. Finish of Cabinet Exterior Trim and Door: Baked enamel, White color.

G. Finish of Cabinet Interior: White colored enamel.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify rough openings for cabinet are correctly sized and located.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install cabinets plumb and level in wall openings, 42 inches from finished floor to top of cabinet.

C. Secure rigidly in place.

D. Place extinguishers in cabinets.

END OF SECTION

SECTION 11 1900
DETENTION SECURITY EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

1. Detention equipment products, labor, and services including but not limited to:

   a. Detention hardware, locks and locking devices.
   b. Finish hardware for detention doors.
   c. Gasket systems including sound & seals, weather stripping, fire & smoke seals.
   d. Detention furniture, furnishings, equipment, and accessories.
   e. Detention toilet and bath accessories.

2. Products Supplied but Not Installed Under This Section:

   a. Items to be embedded in concrete: Section 033000.
   b. Items to be embedded in masonry: Section 042000.
   c. Cylinders and keying for finish hardware locks to be keyed to the detention key system: Section 087100.
   d. Detention hardware to be factory installed by the detention hollow metal manufacturer.: Section 111910.
   e. Electrical boxes to be installed by electrical sub-contractor: Division 26.

B. Single Source Responsibility: The work of this section and the work of the following sections shall be assigned to a qualified Detention Equipment Subcontractor for a single source responsibility.

1. 111900 - Detention Security Equipment
2. 111910 - Detention Hollow Metal
3. 115450 - Suspended Metal Security Panel Ceiling Systems
4. 115460 - Suspended Metal Plank Security Ceiling Systems
5. 281300 – Electronic Access Control

1.2 RELATED SECTIONS

A. 03 3000 - Cast In-Place Concrete

B. 03 4000 – Precast Concrete

C. 04 2000 - Unit Masonry

D. 06 1000 - Rough Carpentry

E. 087111 – Door Hardware

F. 08 8000 - Security Glazing

G. 09 9600 – High Performance Coating

H. 11 1910 - Detention Security Hollow Metal

I. Division 26 - Electrical

J. 28 1300 – Electronic Access Control

1.3 DEFINITIONS

A. Abbreviations:

1. ACA: American Correctional Association.
2. ADA: Americans with Disabilities Act.
3. AHC: Architectural Hardware Consultant member of DHI who is currently qualified under the continuing education program (CEP) and authorized to apply the seal attesting to their current completion of the CEP requirements.
4. AHJ: Authority Having Jurisdiction. As defined in NFPA 80 Fire Doors and Fire Windows.
5. DES: Detention Equipment Subcontractor.
6. ESSS: Electronic Security Systems Subcontractor.

B. Other Definitions:

1. Accessible: As defined in ICC/ANSI A117.1, Americans with Disabilities Act (ADA) and State of Illinois Accessibility requirements.
2. Locking Device: Sliding door device for detention doors.
3. Furnish: Supply materials for installation by others.
4. Install: Install materials furnished by others.
5. Provide: Furnish and install specified materials.

1.4 SYSTEM DESCRIPTION

A. Detention work shall be performed by a single qualified DES meeting the specified requirements and acceptable to the Owner and the Architect.

B. Use products and components designed specifically for detention use unless otherwise specified or approved by the Architect.

C. Performance requirements:

1. Coordinate installation of electrified items with electrical contractor and ESSS.
2. Integrate the work of this section with other sections to ensure that components provided under this section complement and work as a system with components provided under related sections.

1.5 ACTION SUBMITTALS

A. Product Data for each type of product:

1. Manufacturer's instructions for installation and maintenance.
2. Include data substantiating that products comply with the requirements of this section.

B. Shop Drawings:

1. Furnish detailed drawings of locking devices and fabricated equipment.

    a. Show construction methods, type and gauge of metal, hardware and fittings.
    b. Show plan, elevation and cross section details.
    c. Include dimensions, configurations, and connections of detention equipment and its relationship to other work.

2. Confirm that adequate provisions have been made for installation of detention equipment.
3. Furnish setting drawings and templates for anchoring items to be embedded in concrete or masonry.

C. Hardware Schedule:

1. Follow the “Recommended Procedure for Processing Hardware Schedules and Templates" published by DHI.
2. Prepare schedule in the vertical format following the sequence and format of the "Architectural Hardware Scheduling Sequence and Scheduling Format" published by DHI.
3. Coordinate hardware with doors, frames and related work to ensure proper size, thickness, hand, function and finish of hardware.
4. Include a notarized certification signed by an officer of the DES, attesting that, except as specifically shown otherwise: The products shown in the schedule conform to the requirements of the contract documents.
5. The Hardware schedule has been reviewed by an AHC (refer to definitions) to verify proper application of finish hardware items specified in this section.
6. Submit hardware schedule within 20 days after award of contract unless otherwise approved by the Architect.

D. Wiring Diagrams:

1. Furnish manufacturer’s wiring diagrams.
2. Furnish elevation drawings showing locations of electrified hardware and number of conductors required.

    a. Include lock functions, monitoring requirements, color coded conductor locations, and conductor connections.
    b. Include description of operation.

E. Samples:

1. When products other than those shown as “specified manufacturer” are to be furnished, submit a sample of each type, with specified finish. Tag with full description including specification section, article, and paragraph number. Sample will be reviewed by the Architect for design, color, and finish.
2. Samples which are acceptable and remain undamaged through the submittal, review, and field comparison processes, may be used in the work.

F. Keying Schedule

1. Preparation

    a. Coordinate keying with the Architect and the Owner.
    b. Prepare a proposed keying schedule and submit for consideration by the Owner.
    c. Meet with the Owner to present and explain the proposed keying system.

        1) For lever tumbler locks, indicate owner's preference for type of escutcheon, single or double wing.

    d. Make modifications requested by the Owner and revise the keying schedule.
    e. Have the Owner sign and date the final schedule to indicate acceptance.

2. Nomenclature:

    a. Pin Tumbler Keys and Cylinders.

        1) Use the nomenclature and procedures of "Keying Procedures, Systems, and Nomenclature" published by DHI.

    b. Lever Tumbler Keys and Cylinders.

        1) Use numbered sets prefixed by the letter "P".
        2) Do not master key lever tumbler cylinders

3. Submittal:

    a. After acceptance by the Owner, submit for architect's review.

G. Templates

1. Furnish templates for the hardware preparation of the doors and frames.
2. Process templates in accordance with "Recommended Procedure for Processing Hardware Schedules and Templates" published by DHI.

1.6 INFORMATION SUBMITTALS

A. Qualification Data from Non-Prequalified Detention Equipment Subcontractors (DES):

1. Notarized statement from the DES attesting to conformance with the quality assurance requirements.
2. Provide a reference list showing detention projects for which the DES has provided services to. Include dates of completion.

B. Test and Standard Reports:

1. When products other than those shown as "specified manufacturer" are to be furnished:

    a. Furnish copy of the certified test results from nationally recognized testing laboratory showing satisfactory performance of required tests.
    b. Furnish evidence of satisfactory compliance with the standards.
    c. Acceptable evidence shall be one of the following:

1) Listing in product directory published by the organization sponsoring the standard. or a nationally recognized testing laboratory.
2) Manufacturer's literature showing conformance with the standard.
3) Notarized letter from the manufacturer attesting to compliance with the applicable standard.

C. Operation and Maintenance Manuals:

1. On or before the date of substantial completion provide both electronic (pdf) and two bound hard copies of the following:

a. Maintenance Manuals:

1) Include parts lists and detailed instructions for maintenance and repair.

b. Operation Manuals: Include:

1) Operating instructions.
2) Name, address, and phone number of:

a) DES.
b) ESSS.
c) Manufacturers.
d) Local manufacturer's representatives.

3) Copy of final hardware schedule with "as built" corrections.
4) Copy of final keying schedule.

c. Bind each manual in a heavy duty "D" ring loose leaf binder with section dividers.
d. Final Shop Drawings: Bind each set with plastic laminated cover and back sheet.

1.7 QUALITY ASSURANCE

A. Detention Equipment Subcontractors (DES):

1. The following are pre-qualified and acceptable:

a. Stronghold Industries, Brookfield, WI (262-853-0657).
b. Valley Security Co., Elgin, IL (847-888-9972).
c. Cornerstone Detention, Tanner, AL (877-374-7311).

2. Other DES's may be acceptable if they provide information showing they meet the following requirements. Information shall be provided to the Architect no less than 10 days prior to the bid due date. If the DES is acceptable, it will be in the form of an addendum to the specification

a. Experience:

1) Minimum five years' experience in providing and servicing detention equipment including locks and hardware, locking devices, and security control systems.

2) Regularly provides service and service contracts in the geographical area of this project.
3) Has a history of satisfactory completion of at least (10) projects of similar scope and size as this project.

b. Personnel:

1) Uses Welders qualified by the American Welding Society's testing procedures.
2) Service personnel qualified and trained to provide service for detention equipment.

c. References:

1) Project lists: Furnish project name, date of contract, person and phone number to contact at project, and the amount of the subcontract for detention equipment.

a) 5 projects, comparable in size and construction, on which DES has provided detention equipment within the past five years.
b) 5 projects comparable in size and construction that have been in continuous operation for over 5 years.

2) Names and status of projects on which DES or a predecessor company is and has been involved in litigation.
3) Audited financial statement for the most recently completed fiscal year.
4) Letters of recommendation:

a) A letter from a specified or acceptable detention lock manufacturer certifying that the DES is currently a factory trained, fully authorized distributor and installer of their complete line of detention products.
b) A letter from a surety agent stating the DES has the bonding capacity for this project, and that bonding will be allocated to this project if the DES is awarded the subcontract for the detention equipment work.

d. Subcontractors & Suppliers:

1) Name of installation and service companies if it is not done by the DES's own employees.
2) The name of ESSS that will contracted with for the electronic security systems work if that work is specified to be the single responsibility of the DES.

e. Intent to Conform:

1) A notarized letter signed by an officer of the DES, certifying to the intent to conform fully to this specification.

B. Regulatory Requirements

1. Comply with laws, codes, and ordinances of Federal, State, Local, and other agencies having jurisdiction.
2. Fire rated openings: Comply with NFPA 80, Fire Doors and Other Opening Protectives. Provide hardware that is listed by a nationally recognized testing laboratory acceptable to the Authority Having Jurisdiction.

3. Life Safety: Comply with NFPA 101, Life Safety Code.
4. Accessibility: Comply with ICC/ANSI A-1171, the ADA, or more stringent State or local codes.
5. Electrical components: Comply with NFPA-70, National Electrical Code.
6. In case of conflict, the more stringent requirements will apply.
7. If specified requirements are not in compliance with applicable codes, notify Architect in writing.

C. Pre-installation Meeting

1. Meet with suppliers and subcontractors for this and related sections to review installation procedures and workmanship with a special emphasis on unusual conditions to ensure coordination and correct installation procedures.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping

1. Mark or tag every item with identification related to final hardware schedule.
2. Pack locks in manufacturer's individual containers.
3. Wrap and carton finished components and assemblies to prevent damage.
4. Include screws, bolts, basic installation instructions, and installation templates with every package.
5. Identify contents of every carton by means of a machine printed label.

B. Delivery

1. Deliver individually packaged hardware items at the proper time and location (shop or project site) for installation.
2. Deliver items to be built-in or embedded to the project or applicable trade in accordance with construction progress to prevent any delay.
3. Immediately upon delivery, inspect components and assemblies for damage. Remove damaged items from the site.
4. Keys: Arrange for manufacturer of locks to deliver keys direct to the person and address as directed by the Owner. Send keys via direct mail with restricted delivery and return receipt requested.

C. Storage and Protection

1. Provide a secure room or storage area with shelving at the project site.
2. Layout & group hardware by door opening. Verify that hardware for each opening is complete and verify material conforms to that shown on the hardware schedule. At the request of the architect, submit a copy of the hardware schedule with each item checked off to show compliance and signed and dated by the person doing the check.
3. Provide protection against loss or damage.
4. Store in dry area out of way of work in progress.

D. Off-Site Storage

1. If off-site storage is used:

a. Protect stored items against loss or damage.
b. Mark stored items with project name.
c. Stored items shall be available for inspection by Architect and Owner.
d. Submit copies of bill of sale for stored items to the Architect.
e. Provide certificates of insurance showing that stored items are insured against loss and damage.

1.9 PROJECT CONDITIONS

A. Coordination

1. Coordinate the work of this section with other work, and the progress schedule.

B. Scheduling

1. Schedule and coordinate the work of this section with the Architect, Construction Manager, and Owner to ensure that detention restrictions, rules, regulations, and security measures are maintained throughout the course of the work.

C. Environmental Requirements

1. Do not install hardware or electronic components:

a. Until building is enclosed, and temperature is controlled.
b. Until dust and moisture cannot contaminate working parts.
c. Until there is no danger of finish being marred by construction work.

1.10 WARRANTY

A. Extended Warranties

1. Door Closers: Provide manufacturer’s warranty for ten (10) years from date of substantial completion.
2. Detention Locking Devices and Locks: Provide manufacturer’s warranty for two years from date of substantial completion.

1.11 MAINTENANCE

A. Preventative Maintenance

1. In addition to warranty service, provide the following service and inspection:

a. Inspect, adjust, and lubricate hardware, locking devices, and equipment approximately 11 months after date of substantial completion but prior to expiration of extended warranty on locks and locking devices.

b. Submit written report to the Architect and Owner.

B. Tools

1. Furnish to the Owner, special tools required for maintenance of the detention equipment.

	Description	Quantity
a.	Torx© Tool Set;	2
b.	Other special tools required for maintenance	2 of each type

C. Spare Parts

1. Furnish to the Owner, parts for maintenance of the detention equipment. Pack parts in separate rigid plastic containers suitable for storing parts until needed. Clearly label containers with part number and name. Furnish the following:

	Description	Quantity
a.	Security fastener kit:	Plastic compartmented box with 50 of each type and finish security fastener
b.	Electric limit switches:	1 of every type used on the project.
c.	Lock solenoids:	1 of every type used on the project.
d.	Lock motor assemblies:	1 of every type used on the project.
e.	Locking Device motor assemblies:	1 of every hand & type used on the project.
f.	Cell door roller assemblies:	2 sets

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Materials and products specified or shown on the drawings by trade name, manufacturer's name or catalog number establish a level of quality for materials, products, and services.

B. Products shown as acceptable may be used provided proof is submitted to show they conform to the specified requirements and are of equivalent design, materials, quality, and service to the specified product.

C. Products of other manufacturers will be considered for acceptance if the following information is submitted to the Architect at least 10 days prior to bid due date. If a substitution is approved, it will be in the form of an addendum to the bidding documents.

1. Catalog and technical information.
2. Notarized certificates stating that:

   a. The product conforms to the requirements of the specification.
   b. The product is equivalent in design, materials, products, and services as that of the specified manufacturer or, if no manufacturer is shown as specified, equivalent to that of the acceptable manufacturers.
   c. The product complies with specified standards.

D. Provide items of the same type from a single manufacturer unless otherwise specified or approved by the Architect.

E. Abbreviations used for manufacturers:

1.	ABH:	Architectural Builders Hardware Mfg. Inc.
2.	Airteq:	Airteq – Cornerstone Detention Products Inc.
3.	ASSA:	ASSA, Inc., an ASSA ABLOY Company.
4.	Brinks:	RR Brink Locking Systems, Inc.
5.	Brookfield:	Brookfield Industries, Inc.
6.	Burns:	Burns Manufacturing, Inc.
7.	CMD:	CM Detention Products, llc.
8.	DDS:	Detention Device Systems, a DDS Group Company.
9.	Derby:	Derby Industries.
10.	Detex:	Detex Corporation.
11.	Dorma:	Dormakaba Group.
12.	FA:	Folger Adam Products from Southern Folger Detention Equipment Co.
13.	GJ:	Glynn-Johnson – Allegion plc.
14.	Hager:	Hager Companies.
15.	IDS:	Innovative Detention Systems.
16.	Ives:	Ives – Allegion plc.
17.	Jails:	Jails Correctional Products, a Division of Fabcor, Inc.
18.	LCN:	LCN Door Control – Allegion plc.
19.	Medeco	Medeco Security Products, an ASSA ABLOY Company.
20.	NG:	National Guard Products, Inc.
21.	Norix:	Norix Group, Inc.
22.	Norton:	Norton Door Contols, an ASSA ABLOY Company.
23.	Pemko:	Pemko Products, an ASSA ABLOY Company.
24.	Rockwood:	Rockwood Products, an ASSA ABLOY Company.
25.	Sargent:	Sargent Manufacturing Company, an ASSA ABLOY Company.
26.	Securitech:	Securitech Group, Inc.
27.	Southern:	Southern Steel Products from Southern Folger Detention Equipment Co.
28.	Trimco:	Triangle Brass Manufacturing Co., Inc.
29.	Trussbilt:	Trussbilt LLC.
30.	Yale:	Yale, an ASSA ABLOY Company.
31.	Zero:	Zero International – Allegion plc.

2.2 SCREWS AND FASTENERS

A. Material and finish.

1. Finish exposed fasteners to match item fastened. Make fastener of the same material as item fastened, except use plated brass or stainless steel for aluminum items.
2. Exposed fasteners: Torx© brand security fasteners unless otherwise shown.
3. Furnish screws, fasteners, and anchors required for installation.

B. Except where steel doors and frames have steel reinforcement, provide through bolts for fastening surface door closers and overhead holders and stops.

2.3 FINISHES

A. Standard Finish Designations: The designations used to indicate hardware finishes are those established by the BHMA and published in ANSI/BHMA A156.18. Unless otherwise indicated, finish exposed items as follows.

MATERIAL	FINISH DESCRIPTION	BHMA
Stainless Steel	Satin Stainless Steel	630
Brass or bronze, plated	Satin Chromium Plated	626
Steel, plated	Satin Chromium Plated	652
Aluminum	Satin Aluminum, Clear Anodized	628
Steel, not plated	Primed for Painting	600

B. Zinc coat or galvanize steel material prior to plating or painting.

2.4 CYLINDERS AND KEYING

A. Pin Tumbler Cylinders and Keys

1. General:

   a. Description: High security restricted keyway, designed for use with mogul and builder's hardware size cylinders.
   b. Registration of Keying:

      1) Provide keying by the cylinder manufacturer.
      2) Arrange for manufacturer to maintain permanent key identification and registration records.

   c. Replacement Keys: Keys available only from the manufacturer upon written authorization from the Owner.
   d. Provide new key system integrating mogul and commercial type pin tumbler cylinders into one system.

      1) High security side bar type keyway.
      2) Establish new grand master system.
      3) Key individually or in sets as determined by the Owner.

2. Temporary cylinders: Provide temporary construction cylinders and a minimum of ten (10) temporary construction keys for pin tumbler locks on the following doors:

   a. Exterior doors.
   b. Doors to be used for storage during construction.
   c. Doors to areas where electronic security system controls are located.

3. Standard compliance: Conform to UL 437.
4. Keys:

   a. Material: Nickel Silver.

b. Minimum size: 1 ½” x 2” long 1/8 "thick.
c. Quantity:

1) Provide two (2) keys per lock cylinder. Cut keys as directed by the Owner but not less than six (6) keys per key set.
2) Provide six (6) of each Master and Grandmaster key.

d. Stamping of Keys:

1) Stamp keys with an identification code in accordance with “Keying Procedures, Systems, and Nomenclature” published by DHI.
2) Stamp keys “Do Not Duplicate”.

5. Cylinders:

a. Mogul cylinders and tumbler sets:

1) High security, six-pin tumbler cylinder.
2) Material:

a) Body: 1-1/2" diameter, machined from minimum 2" diameter brass alloy bar.
b) Bottom pin tumblers and cylinder balls: Stainless Steel.
c) Top and side tumblers: Brass.

3) Construction.

a) Minimum six pin tumblers.
b) Hardened steel inserts to resist drilling.

4) UL 437 listed.
5) Finish: Plated.

b. Commercial type cylinders & tumblers:

1) High security, six-pin tumbler cylinder.
2) Material:

a) Body: Machined from brass alloy bar stock.
b) Pin tumblers: Nickel Silver or brass.

3) UL 437 listed.
4) Finish: Plated.

c. Marking of Cylinders: Mark body of cylinders with an identification code in accordance with “Keying Procedures, Systems, and Nomenclature” published by DHI. Use black indelible ink pen for marking.

6. Manufacturer:

a. Specified: ASSA.
b. Acceptable subject to conformance with specified requirements: Medeco.

B. Lever Tumbler Paracentric Cylinders & Keying

1. General: Cylinders to be keyed alike in sets.

2. Keys:

a. Size; Not less than 4 ½" long, 7/8" wide x 5/32" thick blade.
b. Overlapping paracentric grooves.
c. Handle: Approximately 2-1/4" x 1-3/8" in size and separated from the key blade by a ½" x 1-1/2" shank.
d. Material: Investment cast or stamped polished silicon bronze alloy.
e. Stamping of Keys: Stamp keys with manufacturers code which when decoded identifies facility.
f. Quantity: Provide for two (2) keys per lock. Cut keys as directed by the Owner but not less than six (6) keys per key set.

3. Cylinder and Tumbler Sets:

a. Minimum six lever tumblers per set.
b. Construction:

1) Maximum 031" clearance between tumbler gate and locking fence.
2) Fit tumblers to allow .025" of wear before replacement of key is required.

c. Material:

1) Tumblers: Spring temper bronze alloy with a notched gate edge.
2) Cylinder: Investment cast silicon brass alloy.

4. Cylinder shield: Provide a stainless-steel cylinder shield for each paracentric key cylinder on exterior doors and on other doors where specified.
5. Manufacturer: Same manufacturer as lever tumbler paracentric locks.

2.5 HINGES

A. Quantity

1. Two (2) hinges for each door up to 60" high.
2. Three (3) hinges for each door up to 90" high.
3. One (1) additional hinge for each 30" or fraction thereof over 90".
4. Electric current carrying hinges are not load bearing. Do not include when calculating quantities.

B. Type 4.5 Full Mortise

1. Description:

a. Designed for Institutional and detention applications.
b. Full mortise, non-handed, reversible.
c. Capable of supporting a 300-pound door with three (3) hinges.

2. Materials:

    a. Hinge leaves: Investment cast stainless steel with integral security stud.
    b. Hinge pin: Concealed, stainless steel, non-removable, hospital tip.
    c. Permanent lubrication.

3. Dimensions:

    a. Overall: 4-1/2” x 4-1/2”.
    b. Leaves: Minimum 3/16” thick with integral security stud, 15/32” Diameter by 1/2" long.

4. Standards Conform to:

    a. ASTM F 1758, grade 1.
    b. ANSI/BHMA A156.1 type A5181.
    c. ANSI/BHMA A156.7 Template.
    d. NFPA 80: When used on labeled fire doors.

5. Fasteners: Eight 1/4-20 x 1/2" stainless steel flat head security Torx© tamper resistant screws.
6. Manufacturers:

    a. Specified: CMD #745
    b. Acceptable: Brookfield, FA, IDS, Southern.

C. Type 4.5EH Full Mortise, Electrified

1. Description: Electrified institutional hinge:

    a. Designed for compatibility with type 745 hinge.
    b. Current carrying, non-load bearing, hinge.
    c. Mount as additional hinge on door.
    d. Allows 180-degree swing of door.

2. Material: Investment cast, type 304 stainless steel.
3. Fabrication:

    a. 3/16" thick leaves.
    b. Hinge pins: non-removable, hospital tip.
    c. Electrical conductors: Five color coded #18 conductors.

        1) UL recognized wire.
        2) Five-foot leads on door leaf.
        3) Three-foot leads on jamb leaf.

    d. Non-handed, reversible.
    e. Full mortise.
    f. Size: 4 1/2" x 4 1/2"

4. Quantity:

a. Provide in addition to load bearing hinges.
b. Provide where specified in hardware sets.
c. Provide wherever electrical wiring is required between door and frame even if not shown on schedule.
d. Provide additional electrified hinges if necessary, to provide number of conductors required by electrified hardware.

5. Manufacturers:

a. Specified: CMD #747.
b. Acceptable: Brookfield, FA, IDS, Southern.

D. Type 3 Utility Hinges

1. Description:

a. Full surface, heavy duty utility hinge for application to moderate weight doors used on access doors, and cabinets. Non-handed, reversible.
b. Capable of supporting a 150 lb. door with 2 hinges.

2. Materials:

1) Fabricate from 1/4" thick cold rolled formed steel.
2) Weld hinge pin after assembly.

b. Size: 3” x 4”.
c. Fasteners: Four 3/8"-16 x 1" button head steel security screws.
d. Finish: Primed for paint.
e. Manufacturer:

1) Specified: CMD #730P
2) Acceptable: Brookfield, FA, IDS, Southern.

E. Type 5

1. Description:

a. Heavy duty, full surface hinge for application to security doors, cell doors, and gates. Non-handed,
b. Capable of supporting a 600-lb. door with 2 hinges.

2. Materials:

a. Fabricated from 1/2" thick cold rolled steel.
b. 5/8” stainless steel hinge pin.

1) Weld hinge pin after assembly.

c. Heavy duty polymer thrusts bearing.

3. Standards: Conform to ASTM F1758, grade 1 requirements.
4. Size: 5" high.

5. Fasteners: Weld on.
6. Finish: Primed for paint.
7. Manufacturer:

    a. Specified: CMD #750
    b. Acceptable: FA, Brookfield, IDS, Southern.

2.6 LOCKS

A. General Requirements

1. Fastenings: Torx© tamper resistant screws.

B. Type 1000 Mortise Lock

1. Description.:

    a. Heavy duty mortise lock.
    b. Includes lock, strike, operating trim, mortise cylinders, and adjustable cylinder collars.
    c. Provide lever handle trim unless otherwise shown.

2. Standards compliance, conform to:

    a. UL 10C, 3-hour fire door rating when specified for fire rate doors.
    b. ANSI / BHMA A156.13, series 1000, Operational Grade 1, Security Grade 1.
    c. ANSI/BHMA A156.25 (Locks with electrified locking/unlocking).

3. Lock Body:

    a. Material:

        1) Armored front:
        2) Case and cover: Stainless steel or wrought steel with corrosion resistant finish
        3) Internal working parts: Stainless steel or steel with corrosion resistant finish.
        4) Latch bolt: minimum 3/4" throw
        5) Dead bolt: Hardened steel roller inserts. 1" throw.
        6) Spindle hubs: Solid.

    b. Fabrication:

        1) Fits ANSI/BHMA A115 series door preparation.
        2) Field reversible handing.

4. Lock functions:

    a. Unless otherwise indicated, functions shown are described in ANSI/BHMA A156.13.
    b. Electrified functions:

        1) Suffix E-07-1:

a) Controlled electric release trim outside, free egress trim inside.
b) Controlled trim always locked except when unlocked by key or remote switch. (Storeroom function).
c) Request to exit switch in inside trim.

2) Suffix E-07-2:

a) Controlled electric release trim both sides.
b) Controlled trims always locked except when unlocked by key or remote switch. (Storeroom function).

5. Strikes:

a. Material: Type 304 Stainless steel.
b. Provide curved lip for locks with latch bolts.
c. Provide corrosion resistant wrought steel dust box.

C. Operating Trim

1. General:

a. Spindles: Minimum 11/32" cold drawn steel.
b. Through bolt mounting.
c. Include modification of lock body if required by trim manufacturer.

2. Design:

a. Provide lever handles and full escutcheons unless otherwise shown.
b. Lever: 3/4" diameter x minimum 4-11/16" long tubular design with return.
c. Material: Type 304 stainless steel.

3. Vandal resistant –Choice of:

a. Break away levers with internal slip clutch which allows re-setting lever to normal operating function without replacing parts or removing operating trim from door. Built in restrictor to positively stop the movement of the lever without relying on internal parts of the lock or:
b. Detention quality lever track assembly. Provides positive stop for trim. Include open bottom to prevent dirt build-up.

4. Other features to be included:
a. Suffix A: Switch installed behind the strike plate to indicate when the latch bolt is extended into the strike.
b. Suffix E: Electrified locking/unlocking of operating trim.

c. Provide plug connectors for wiring connection.
d. Fail secure operation unless otherwise shown.

1) Suffix FS: Fail safe operation. Controlled levers unlock if power fails.

5. Electrical Requirements:

a. 24 VDC Thermosol™ protected solenoid operation.
b. Choice of:

1) Control trim with electric solenoid and release mechanism within the trim.
2) Electric solenoid and release mechanism concealed in lock body.

c. Provide 8' leads on motors, solenoids and switches.
d. Include deadlock indication switch to indicate when latch bolt is deadlocked .
e. Include request to exit (RTE) switch activated by depressing the lever handle, where door is protected by an alarm system and is required to shunt alarm when exiting.
f. Include latch position switch.

6. Manufacturers:
   a. Specified: Securitech MLZ series with GG x G3 trim and specified options.
   b. Acceptable:
      1) Brinks 1040 / 1060 series with Lever Track.
      2) FA 9300 series with LT trim and specified options.

D. Type 10M Series Deadlock

1. Material:

   a. Case – Cast steel, zinc plated.
   b. Cover - Cold finished steel, zinc plated.
   c. Deadbolt - Cast steel, zinc plated, 3/4 inch x 1-5/8", 5/8 inch throw.
   d. Cylinder: Mogul cylinder.
   e. Galvanize case, cover and lock mounting for use on exterior or shower doors.

2. Function:

   a. Key operated deadlock for use on small doors. Key removable in the locked and unlocked positions.
   b. Type 10M x K1S: Keyed one side.
   c. Type 10M x K2S: Keyed two sides.

3. Accessories:

   a. Provide Lock mountings:

      1) Type HM for hollow metal doors.
      2) Type P for plate doors.

   b. Provide 10-4DB Strike - 3/16-inch steel with dust box to protect bolt, and mounting screws.

4. Manufacturers:

   a. Specified: CMD #10M
   b. Acceptable: Airteq, Brinks, FA.

E. Type 85 Series maximum security deadlock.

1. Material:

   a. Case - Cast steel, zinc plated.
   b. Cover - Cold rolled steel, zinc plated.

c. Deadbolt - Cold rolled steel, zinc plated, with 1/4-inch diameter hardened steel inserts
d. Mogul cylinder.

2. Function:

a. Key operated deadlock. Key removable in the locked and unlocked positions.
b. Type 85 x K1S: Keyed one side.
c. Type 85 x K2S: Keyed two sides.

3. Accessories:

a. Provide Lock mountings - G for grille doors, HM for hollow metal doors, P for plate doors.
b. Provide Strike - 3/16 inch steel with dust box to protect bolt, and mounting screws.
c. When specified, provide 80-4BL Strike - 3/16-inch steel with dust box and switch to monitor bolt position.

4. Dimensions: 1-1/2" x 5-1/2" x 3/4".
5. Manufacturers:

a. Specified: CMD 85
b. Acceptable: Airteq, Brinks, FA.

F. Type 120 Jamb Mounted Electric Lock

1. Description:

a. Institutional, jamb mounted, electrified mogul cylinder lock for medium/maximum security applications.

1) Mounts into frame pocket. Designed for 7” medium width jamb.
2) External mounting holes.
3) Allows use of flush, removable cover plate for flexibility and ease of service
4) Mounts behind frame. No faceplate required.

b. Includes: Lock, Strike, and Mogul cylinder(s).

2. General Requirements:

a. Provide plug connectors for wiring connection.
b. Provide switches for interlocking doors in interlocks shown on drawings and where scheduled.
c. Provide adjustable cylinder collar for mogul cylinders.
d. Provide cylinder extension to bring cylinder flush with frame face.

3. Materials:

a. Back Plate: 1/4" reinforced investment cast stainless steel.
b. Stabilizer cage: 10-gauge steel.
c. Case, cover: Minimum 10-gauge steel, zinc plated.
d. Latch bolt, roller bolt: Tool resistant investment cast stainless steel.

e. Strike: Investment cast stainless steel.
f. Springs: Stainless steel.
g. Operating levers: 1/4" zinc plated steel.
h. Motors (Suffix M): 24 VDC permanent magnet gearmotor operation.

1) Motor rated at maximum 2.2 amps' full load.
2) Dual motor switches for half or full cycle operation.

i. Solenoids (Suffix E): 1) 120 VAC continuous duty solenoid operation.

1) Rated at maximum 13.0 amps inrush, 0.75 amps seated.

j. Switches: SPDT, UL Listed rated for 15amps at 125 or 250 VAC.
k. Motors" Half cycle (MC) with switch to allow latch to be held back for period of time programmed in controls.

4. Minimum Dimensions:

a. Lock case: 5" x 3 ½" x 12".
b. Latch bolt: 1 ½" x ¾" x 1" throw x ¾" projection.
c. Frame pocket size: 8" x 14".

5. Integral deadlock and latch bolt monitoring switches.
6. Standards:

a. Conform to ASTM F1577, grade 1 requirements.
b. U.L. fire door listed when used on labeled fire doors.

7. Cylinders:

a. Suffix –1S: Keyed one side.
b. Suffix –2S: Keyed two sides.

8. Function:

a. Unlocks when energized.

1) With maintained switch, once unlocked, latch-bolt remains retracted until it is selected to lock. When the switch is released, the latch bolt extends automatically. The position of the door does not affect this operation.
2) With momentary switch, latch bolt remains retracted as long as circuit is energized. (Requires non-holdback option).

b. Suffix - 2K: Same as above except knob release on one side. Knob is always active.

9. Exterior use modification

a. When specified for exterior doors, modify lock with protected electrical wiring, low temperature lubricant, cover gasket, and other modifications required by the manufacturer for the intended use in exterior applications. If the manufacturer cannot provide a 24vdc operated motor lock for exterior application, provide 120 vac

solenoid operated lock and relay operated interface to allow operation of the lock with 24vdc controls.

10. Provide 24VDC ½ Cycle operation unless otherwise shown.

11. Manufacturers:
    a. Specified: Folger 120 series.
    b. Acceptable: Airteq, DDS

G. Type NS400 Frame Mounted Electric Lock

1. Description:

    a. Institutional, frame mounted, electrified cylinder lock for minimum/medium/security applications.

        1) Mounts into frame pocket. Designed for “2” hollow metal jam construction.
        2) ANSI F-1577.
        3) Grade 1 - Impact
        4) UL1034: Mounts behind frame. No faceplate required.

    b. Includes: Lock, Strike, and Mogul cylinder(s).

2. General Requirements:

    a. Provide plug connectors for wiring connection.
    b. Provide switches for interlocking doors in interlocks shown on drawings and where scheduled.
    c. Provide adjustable cylinder collar for mogul cylinders.
    d. Provide cylinder extension to bring cylinder flush with frame face.

3. Materials:

    a. Lock Case: Investment cast stainless steel.
    b. Stabilizer cage: 10-gauge steel.
    c. Designed for standard 2” frame.
    d. Latch bolt: Tool resistant investment cast stainless steel.
    e. Strike: Investment cast stainless steel.
    f. Springs: Stainless steel.
    g. Operating levers: 1/4" zinc plated steel.
    h. Motors (Suffix M): 24 VDC permanent magnet gearmotor operation.

        1) Motor rated at maximum 1.29 amps' full load.
        2) Dual motor switches for half or full cycle operation.

    i. Solenoids (Suffix E): 1) 24 VAC or DC continuous duty solenoid operation.

        1) Rated at maximum 3.3 amps

    j. Switches: SPDT, UL Listed rated for 15amps at 125 or 250 VAC.
    k. Motors” Half cycle (MC) with switch to allow latch to be held back for period of time programmed in controls.

4. Minimum Dimensions:
   a. Latch bolt: 1 ½" x ¾" x 1" throw x ¾" projection.
   b. Frame pocket size: 9.5" x 1.5".

5. Integral deadlock and latch bolt monitoring switches.
6. Standards:

   a. Conform to ASTM F1577, grade 1 requirements.
   b. U.L. fire door listed when used on labeled fire doors.

7. Cylinders:

   a. Suffix –1S: Keyed one side.
   b. Suffix –2S: Keyed two sides.

8. Function:

   a. Unlocks when energized.

      1) With maintained switch, once unlocked, latch-bolt remains retracted until it is selected to lock. When the switch is released, the latch bolt extends automatically. The position of the door does not affect this operation.
      2) With momentary switch, latch bolt remains retracted as long as circuit is energized. (Requires non-holdback option).

   b. Suffix - 2K: Same as above except knob release on one side. Knob is always active.

9. Exterior use modification

   a. When specified for exterior doors, modify lock with protected electrical wiring, low temperature lubricant, cover gasket, and other modifications required by the manufacturer for the intended use in exterior applications.

10. Provide 24VDC ½ Cycle operation unless otherwise shown.

11. Manufacturers:

    a. Specified: Folger NS400 Series
    b. Acceptable: Airteq, DDS.
    .

H. Lever Tumbler Locks

1. General:

   a. Operate with lever tumbler paracentric key.
   b. Include lock, lock mounting, escutcheons, strike and mounting screws.
   c. Fasteners: Break off head security screws on lock mounting and strike. Torx© tamper resistant screws on cylinder escutcheons.
   d. Lever tumbler locks shall be from a single manufacturer.

2. Type 80 Series maximum security deadlock.

a. Material:

1) Case - Cast steel, zinc plated.
2) Cover - Cold rolled steel, zinc plated.
3) Deadbolt - Cold rolled steel, zinc plated, with 1/4-inch diameter hardened steel inserts.

b. Function:

1) Key operated deadlock. Key removable in the locked and unlocked positions except when single wing escutcheon is specified.
2) Type 80 x K1S: Keyed one side.
3) Type 80 x K2S: Keyed two sides.

c. Performance: Include anti-bind feature to prevent tumblers from binding with side pressure applied to deadbolt. Lock shall operate under a 300-pound side load test.

d. Accessories:

1) Provide Lock mountings - G for grille doors, HM for hollow metal doors, P for plate doors.
2) Provide 80-4DB Strike - 3/16-inch steel with dust box to protect bolt, and mounting screws.
3) When specified, provide 80-4BL Strike - 3/16-inch steel with dust box and switch to monitor bolt position.

e. Dimensions: 1-1/2" x 5-1/2" x 3/4".

f. Manufacturers:

1) Specified: CMD 80.
2) Acceptable: Airteq, Brinks, FA.

3. Type 10 Series:

a. Material:

1) Case – Cast steel, zinc plated.
2) Cover - Cold finished steel, zinc plated.
3) Deadbolt - Cast steel, zinc plated, 3/4 inch x 1-5/8", 5/8-inch throw.
4) Cylinder: Investment cast, silicon brass alloy lever tumbler.
5) Galvanize case, cover and lock mounting for use on exterior or shower doors.

b. Function:

1) Key operated deadlock for use on small doors. Key removable in the locked and unlocked positions except when single wing escutcheon is specified.
2) Type 10 x K1S: Keyed one side.
3) Type 10 x K2S: Keyed two sides.

c. Accessories:

1) Provide Lock mountings:

a) Type HM for hollow metal doors.
b) Type P for plate doors.

2) Provide 10-4DB Strike - 3/16-inch steel with dust box to protect bolt, and mounting screws.

d. Manufacturers:

1) Specified: CMD 120 series.
2) Acceptable: Airteq, Brinks, FA.

2.7 DOOR POSITION SWITCHES

A. Type 5340

1. Description:

a. Compact, surface mounted secure door position switch specifically designed for detention use.
b. Frame mounted with actuator above top hinge.
c. Includes Case, Cover, Actuator, Actuator arm, switch, and plug in connector.

2. Material:

a. Case and cover: 11-gauge mild steel, zinc plated.
b. Actuator arm: Cold rolled steel, zinc plated.
c. Switch: UL listed, SPDT contacts, 10 amp rated.

3. Construction:

a. Tamper resistant connection to door.
b. Adjustable tripper switch to actuate signal device.
c. Sloped top design.
d. Allows 180-degree door swing.
e. Universal mounting.

4. Finish. USP, Zinc plated.
5. Manufacturer:

a. Specified: CMD 5340.
b. Acceptable: Detex.

B. Type 201

1. Mortised.
2. Material:

a. Body: steel cadmium plated.
b. Face plate: anodized Aluminum.

3. Construction:

a. Potted components for protection against shock and moisture.
b. Switch: SPDT contacts with current ratings:

1) Current resistive load l.0 amps.
2) Power, restrictive load DC 15 watts.
3) Power, resistive load AC 24 VA.

c. Current rating at 24 V.

1) Resistive load DC .625 amps.
2) Resistive Load AC 1.0 amps.

4. Size: Face plate 4 7/8" x 1 1/4" x 1/l6".
5. Mounting: concealed when door is closed.
6. Listed for use on labeled fire doors.
7. Manufacturer:

a. Specified: CMD 201.
b. Acceptable: Detex.

2.8 DOOR PULLS

A. General requirements

1. Construction: Specifically designed for detention use.
2. Material: Investment cast stainless steel.

B. Type 701

1. Description: Raised bar pull.

2. Fabrication:

a. Overall length – Minimum 9”.
b. Projections: Minimum 2 3/16".

3. Manufacturer:

a. Specified: CMD #701
b. Acceptable: FA, Rockwood.

C. Type 705

1. Description: Recessed flush pull

2. Fabrication:

a. Size: 4'' wide x 5'' high x 1” depth.
b. Fingertip recessed grip.

3. Manufacturer:

a. Specified: CMD #705 Series.
b. Acceptable: FA, Rockwood.

2.9 CLOSERS

A. General Requirements

1. Provide closers where scheduled and provide closers for fire and/or smoke rated doors if not scheduled.
2. Unless otherwise instructed by the Architect, size according to manufacturer recommendation for specific door size, location, and use.
3. Designed for vandal resistance and intended for detention applications.

B. Standards:

1. Conform to grade 1 requirements of ANSI/BHMA A156.4, Performance tests PT-1.
2. Conform to ANSI A117 accessibility requirements on accessible doors.

C. Material:

1. Cylinder: High strength cast iron or extruded aluminum.
2. Main Arm and forearms: Extra heavy Forged Steel.
3. Piston: One-piece forged steel.
4. Fluid: Exterior doors: multi viscosity fluid designed for temperatures from 120 degrees F. to -30 degrees F.
5. Regulating screws: Non-critical, tamper resistant.
6. Cover for surface closers: Heavy gauge steel.
7. Fasteners: Torx© brand security type.

D. Construction:

1. Full rack and pinion mechanism.
2. Two independent speed regulating screws (closing speed and latching speed).
3. Adjustable hydraulic back check.
4. Arm joints pinned to prevent disassembly.
5. Provide closers, arms, and brackets for 90-degree swing of doors unless otherwise shown on the drawings, requested by the Architect, or required by Code.
6. Suffix AVB: Advanced variable back check to start back check at approximately 45-degree opening.
7. Suffix T: jam and tamper resistant, low friction track and roller with single lever arms for concealed closers and for track type surface models.
8. Suffix HO: hold open feature.

E. Accessories:

1. Provide brackets, drop plates, space blocks, and other accessories required for installation.

F. Closer Types

TYPE	DESCRIPTION	BHMA

C1	Parallel Arm Mount	C02021
C2	Parallel Arm Mounts w/ Stop	C02021 x PT4G
C3	Regular Arm Mount	C02011
C4	Overhead Concealed	C05031
C5	Parallel Arm Electromechanical holder Closer for Fire Release	

Unless specifically shown otherwise, provide surface closers with arms and brackets for mounting on side away from corridor, except mount on side away from detention areas.

G. Manufacturers

1. Specified: LCN.
2. Acceptable: Dorma, Norton, Sargent.

2.10 PROTECTION PLATES

A. General Requirements

1. Material: Stainless Steel, .050" thick.
2. Conform to ANSI/BHMA A156.6.
3. Bevel edges of metal.
4. Counter sink screw holes and provide oval head fasteners.

B. Kick Plates

1. Provide on the push side of doors that have a closer and on other doors where shown in hardware sets.
2. Conform to ANSI/BHMA A156.6, Type J102
3. Size:

a. Height: Unless otherwise specified, 10 inches high.

1) For doors with bottom rails less than 10 inches, reduce height to ½ inch less than bottom rail unless otherwise required by accessibility codes.

b. Width:

1) 2" less than door width on push side of single doors.
2) 1" less than door width on push side of pairs of doors and on pull side of doors.

C. Mop Plates

1. Conform to ANSI/BHMA A156.6, Type J102.
2. Size:

a. Height: Unless otherwise specified, 6 inches high.
b. Width:

1) 2" less than door width on push side of single doors.
2) 1" less than door width on push side of pairs of doors and on pull side of doors.

D. Manufacturers

1. Specified: Burns, Hager, Rockwood, Trimco, Ives.

2.11 STOPS AND HOLDERS

A. General Requirements:

1. Provide a stop at every door. Provide holders where scheduled.
2. Types to use unless otherwise specified:

a. Wall stops where wall is solid or reinforced and door swings against the wall.
b. Floor stops where wall bumpers cannot be used but door swings against a wall or equipment and stop will not be a tripping hazard.
c. Overhead stops where door does not swing against a wall.

3. Anchors: Provide product manufacturer's standard anchors appropriate for material to which stops are to be fastened. Except, use through bolts for overhead stops and holders.
4. Material: Stainless steel.

B. Wall & Floor Stops

1. Type #760.

a. Heavy duty detention doorstop.
b. Use:

1) As floor or wall stop unless otherwise specified.
2) When used as wall stop. Mount to contact bottom of door.

c. Material:

1) Stop: 2" diameter x 3-1/2" long, black 90-durometer silicone rubber.
2) Post: Steel with 5/8" -11 thread.

d. Manufacturer:
1) Specified: IDS #760.
2) Acceptable: ABH, FA.

2. Wall Bumpers:

a. Conform to ANSI Al56.l6, type L52251.
b. Use only when specifically shown in schedule.
c. Material: Stainless steel.
d. Manufacturers: Acceptable: Burns, Hager, Rockwood, Trimco, Ives.

3. Floor Stop type 200:

a. Conform to ANSI Al56.16, type L02161 or L02141 where door undercut allows. Otherwise, use type L02121.
b. Use only when specifically shown in schedule.
c. Manufacturers: Acceptable: Burns, Hager, Rockwood, Trimco, Ives.

C. Overhead Stops:

1. General:

a. Coordinate application with type of closer.
b. Provide special template where required for use with concealed closers.
c. Adjustable single point hold-open field adjustable from 85 to 110 degrees.

2. Standards: Conform to ANSI A156.8.

a. Unless otherwise shown on schedule, provide concealed type 1 for use with surface mounted closers and surface mount type 2 for use with concealed closers.

3. Manufacturer:

a. Specified: ABH series 1000ADJ and 9000ADJ.
b. Acceptable: GJ, Yale.

2.12 FOOT AND HEAD BOLTS

A. General requirements

1. Material:
a. Malleable iron case.
b. 7 ga cover
c. ¾ inch throw deadbolt

2. Screws and fasteners:

a. Provide threshold manufacturer's recommended screws and anchors for material being fastened to. Where exposed to inmates, provide security Torx© type fasteners.

B. Types

1. Suffix MS: Manually operated with spanner key.
2. Suffix K: 10 locks with key.

C. Manufacturers.

1. Specified: Folder 150 series
2. Acceptable: Southern Steel, Brinks

2.13 TYPE 3800 CREMONE BOLTS

A. General requirements

1. Description:

a. Lever tumbler mechanical deadlocks for single of pair swing doors.
b. Three-point locking for single doors and five point locking for double doors.

2. Materials:

a. Case and cover 3/16-inch channel iron and 7-gauge steel.
b. Head and foot bolts 7/8-inch diameter steel.
c. Large solid bolt 2 inch by ¾ inch fluish retracted.
d. Bolt throw ¾ inch.
e. Cast zinc handles.

B. Types

1. 3820 keyed one side 3860 keyed two sides

2. Suffix -S option: Mortise head bolt keeper with switch for status

C. Manufacturers

1. Specified: Folger 3800 series
2. Acceptable: Airteq, DDS

2.14 THRESHOLDS

A. General requirements

1. Material:

a. Base Material: Extruded aluminum.
b. Gasket Material: Tubular design, solid neoprene.

2. Screws and fasteners:

a. Provide threshold manufacturer's recommended screws and anchors for material being fastened to. Where exposed to inmates, provide security Torx© type fasteners.

3. Standards: Conform to requirements of ANSI/BHMA A156.21.

B. Types

1. Provide flat utility type T1 saddle when used with door sweeps 4" wide x 1/2" maximum height.
2. Where specified, provide type Y2 rabbet type saddle 3 5/8" wide by ½" maximum height.

C. Manufacturers

1. Specified: Zero.
2. Acceptable: NG, Pemko.

2.15 GASKETING

A. General Requirements:

1. Housing: Aluminum, with anodized clear finish.
2. Gasket material: Tubular design, solid neoprene.
3. Screws and fasteners:

    a. Provide gasket manufacturer's recommended screws for material being fastened to.
    b. Torx© type security fasteners.
    c. Color matched to item.

4. Performance: Comply with ANSI/BHMA A156.22.

B. Weather-Stripping

1. Heads and jambs: Conform to ANSI/BHMA A156.22, R3B265 (R3B264 if used for smoke control)) head and jamb seals with a maximum projection from the frame of .220".
2. Door sweeps: Where a flat saddle is used and on other doors where scheduled, provide a bottom door sweep, ANSI/BHMA A156.22, R3A435. Housing: minimum .075: thick extruded aluminum with polypropylene brush and fin seal.
3. Top protection: Provide on exterior doors: interlocking water shed assembly.

C. Sound Seals:

1. Provide sound seal system tested for a rating of a minimum 39 STC when tested with an appropriate operating door.

    a. Include head and jamb seals and heavy duty, grade 1 concealed automatic door bottom.

D. Smoke & Fire Seals

1. Provide fire rated smoke seals:

    a. For labeled fire doors in a means of egress or opening onto a means of egress.
    b. For doors where shown in hardware sets.

2. Maintain minimum required rating.
3. Include:

    a. Head and jambs: Tube type, neoprene gasketing in 1" housing, ANSI/BHMA A156.22, type R3B264.
    b. Concealed automatic door bottom.

    c. Meeting stiles of pairs of doors without overlapping astragals: provide mortised housings with neoprene in one housing.

4. When used on labeled fire doors, provide certificate showing that gasketing has been successfully tested in accordance with ASTM E-152, UL10B (UL10C, if applicable), and NFPA 252.

E. Automatic Door Bottoms

1. Heavy duty, grade 1 concealed automatic door bottom with tubular compression type neoprene seal. (ANSI/BHMA R0Y334).

F. Manufacturers

1. Specified: Zero.
2. Acceptable: NG, Pemko.

2.16 ACCESS PANELS

A. Frame

1. 3" x 2" x 3/16" steel angle.
2. Corrugated lock strap.
3. Welded angle stops.

B. Panel: 3/16" steel with 1/4" flanges.

1. Hardware:

a. Two prison hinges, Type 3 FS.
b. Prison deadlock type 10.

2. Size: Opening 28" x 48" unless otherwise shown or specified.
3. Finish: Painted.

C. Manufacturer:

1. Specified: CMD model # 793W.
2. Acceptable: Brinks, DDS, FA.

PART 3 - EXECUTION

3.1 COORDINATION

A. Coordinate all rough openings and anchorage requirements with concrete and masonry sub-contractor.

B. Coordinate hardware and food pass requirements with Detention Hollow Metal manufacturer. Coordinate installation of access panels, furniture, key storage cabinet, and miscellaneous specialty items with all other trades involved.

C. Coordinate electrical requirements with electrical sub-contractor including electrical conduit, fittings, junction boxes, and wiring for items specified in this section.

1. Coordinate installation of electrical boxes provided by the DES with electrical sub-contractor.

3.2 INSTALLERS

A. Install detention equipment in place and put in operation under the supervision of a trained, qualified supervisor, experienced in the installation of detention equipment.

B. Welders: Use only welders and tackers who are qualified by the American Welding Society's testing procedure.

3.3 INSPECTION

A. Site verification of conditions:

1. Verify that doors and frames are within the specified tolerances before installing hardware.
2. Verify rough openings and locations are correct.
3. Examine surfaces, anchors, and finish of materials to receive detention equipment. Report unsatisfactory conditions to the Architect.

3.4 PREPARATION

A. Protection: Protect adjacent surfaces prior to installing detention products.

B. Surface preparation:

1. Surfaces to be welded: Clean of loose scale, rust, oil, grease, paint, and other foreign matter.

3.5 INSTALLATION

A. General

1. Install in accordance with the manufacturer's instructions and recommendations.
2. Set level, plumb, and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
3. Drill and countersink units which are not factory prepared for fasteners.
4. Where cutting and fitting is required to install hardware or equipment onto or into surfaces which are to be painted or finished, install each item and then remove and store in a secure place. Do not install surface mounted items until finishes have been completed.
5. Where reinforcing and/or mounting plates and supports are required for surface mounting of hardware, use mild steel properly drilled and tapped to receive hardware fasteners.
6. During construction, provide blank strike plates for doors that do not provide free egress.
7. All exposed fasteners to be security type fasteners as recommended by manufacturer.

B. Hardware Locations

1. Mount hardware at heights published in the "Recommended Locations for Builders Hardware" published by DHI unless otherwise shown or required to comply with governing regulations.
2. Door Swing: Mount hardware to allow door swing shown on the drawings except:

a. Where otherwise directed by the Architect.
b. Doors shown as 90-degree swing, locate hardware for 110 degree swing if wall conditions and equipment layout permit.

C. Thresholds

1. Cut and fit thresholds to profile of door frames, with mitered corners and hairline joints.
2. Fasten with No. 10 or larger screws of the proper type for permanent anchorage. Use fasteners made of stainless steel or bronze material.
3. Set thresholds in a bead of butyl rubber or polyisobutylene sealant to exclude moisture. Completely fill concealed voids.

D. Electric Locks

1. Exterior Applications:

a. Provide foam seal on lock cover of frame mounted locks.
b. Calk perimeter of lock pocket cover with silicon sealant.

E. Closers

1. Install surface closers on side of door opening away from corridors except in detention areas, install on side of opening away from holding areas.

F. Stops

1. Install floor stops to come in contact with door as near the lock edge as possible.
2. Install wall bumpers to contact against center of knobs and levers.
3. Do not install floor stops where they will be a tripping hazard.
4. Where possible, install detention stops on wall.

G. Mirrors and Back Plate Mounts

1. After installing back plates and mirrors, seal gap between mirror frame and wall by caulking with pick resistant sealants.

H. Welding

1. Execute welding in accordance with the American Welding Society's "Structural Welding Code AWS D1 ". Use Arc welding in fabrication and erection work where practical.

a. Welds shall be neat, have a clean appearance, and be deep penetration in accordance with AWS standards. Joints shall be tight and true with members ground to assure a tight fit.
b. Welds shall be uniform section and smoothness without overlaps and a minimum of craters, porosity, and clinkers.
c. Remove projecting burrs, edges, or rough spots by grinding. Grind smooth plug welds where exposed to view.
d. Visual inspection of edges, end fillets, and butt joints shall show good fusion width and penetration into base metals.

2. Take precautions to minimize stress and distortions due to heat.

3. Repair of defective welds by adding new material over the defects is not permitted.

I. Fastenings

1. Fasten detention equipment components to each other and to building construction as detailed or as otherwise required to provide a secure, permanent installation.
2. Where fastening spacing, or sizes are not shown, use spacing and sizing of bolts, screws, and welds which will:

   a. Develop the full strength of the members being fastened.
   b. Cause failure due to over stressing to occur in the members before occurring in the fastenings.

3. Use embedded steel shapes for fastening to concrete and unit masonry.
4. Fastenings for components which must be removed for servicing, maintenance, and replacement shall be Torx© security heads except where otherwise shown.
5. Permanent fastenings shall be welds, snap-off head prison screws, or rivets unless shown otherwise.

3.6 REPAIR/RESTORATION

A. Touch Up Painting

1. Immediately after installation, sand areas where prime coat has been damaged and touch up with same primer as applied by the manufacturer.
2. Remove rust before touching up primer is applied.

3.7 FIELD QUALITY CONTROL

A. Supervision: Include the services of a qualified, trained technician to supervise the installation and activation of products included in this section.

3.8 ADJUSTING

A. Adjustment:

1. Check and adjust operating hardware and doors to ensure proper function and operation.
2. After the building is completed and in use, make final adjustments to compensate for air movement and other conditions.

B. Lubrication: Lubricate moving parts with lubricant recommended by the manufacturer.

C. Remove items which cannot be adjusted to operate properly and smoothly. Replace with new products.

D. After installation, arrange for the closer manufacturer’s factory representative to inspect and adjust closers to ensure proper adjustment and operation.

E. Approximately six months after acceptance of project, examine the equipment for proper operation, and readjust, clean, lubricate, and replace parts and equipment for proper operation. Prepare a detailed written report of this inspection for the Architect and Owner.

3.9 CLEANING

A. Clean and polish hardware to restore original factory appearance. Use caution not to remove protective surfaces on plated material.

3.10 DEMONSTRATION AND TRAINING

A. Manufacturer's Field Service: Arrange for the manufacturers of the locking systems and electronic security system to field test, start up, and demonstrate proper operation of the systems.

B. Demonstrate to and instruct the Owners personnel on proper operation, maintenance, care, and adjustment of equipment.

1. Provide a minimum of eight hours for instruction of owner’s personnel.

3.11 DETENTION HARDWARE SETS

A. The following schedule of hardware is intended to designate the quantity and type of material required. Changes in this list because of model number changes and changes in function shall be noted in the schedule of detention hardware to be submitted.

B. Detention devices and locks to be ½ cycle motors.

* Indicates “refer to specification to determine quantity”.

1. Set DE-01 (Cremone Bolt) 1200B

Each door to have:

Quantity	Item	Type
*	Hinges	4.5
2	Cremone Bolt Keyed Both Sides	3862HM
2	Closer w/ Hold Open	C-1
2	Wall Stop	760

OPERATION:

Access:

a. Retract bolts by lever.
b. Key deadlocks bolt, head bolt, and foot bolt.

Egress:

a. Retract bolts by lever.
b. Key deadlocks bolt, head bolt, and foot bolt.

2. Set DE-02 (Cremone Bolt Hold Open) 1201, 1208, 1240

Each door to have:

Quantity	Item	Type
*	Hinges	4.5
2	Cremone Bolt Keyed Both Sides	3862HM
2	Closer w/Hold Open	C-1
2	Pull Raised	701
2	Wall Stop	760

OPERATION:

Access:

a. Retract bolts by lever.
b. Key deadlocks bolt, head, and foot bolts.

Egress:

c. Retract bolts by lever.
d. Key deadlocks bolt, head, and foot bolts.

3. Set DE-03 (Cremone Bolt Exterior) 1237E

Each door to have:

Quantity	Item	Type
*	Hinges	4.5
2	Cremone Bolt w/Status switch, Keyed 2 Both Sides	3862HM-S
2	Closer w/ Stop	C-1
2	Pull Raised	701
2	Wall Stop	760
2 Sets	Weather-Stripping	
2	Threshold	Y2
2	Rain Drip	

OPERATION:

Access:

a. Retract bolts by lever.
b. Key deadlocks bolt, head, and foot bolts.

Egress:

e. Retract bolts by lever.
f. Key deadlocks bolt, head, and foot bolts.

4. Set DE-04 (Electrified Deadbolt, Exterior, Key 2 Sides) 1200E, 1199E

Each door to have:

Quantity	Item	Type
*	Hinges	4.5
1	Electrified Deadbolt- Keyed Two Sides	NS406MCD
1	Closer	C-1
1	Door Position Switch	5340
2	Pulls	701
1 set	Weather-Stripping	
1	Rain Drip	
1	Threshold	Y2

OPERATION:

Access:

a. Retract bolt of electrified lock by momentary contact switch or key.

Egress:

b. Retract bolt of electrified lock by momentary contact switch or key.

5. Set DE-05 (Rolling Door Lock) 120RUP Deadlatch 1240E

Each door to have:

Quantity	Item	Type
1	120 Series Rolling Door Deadlatch	120RUP

OPERATION:

Access:

a. Retract latch of electrified lock by momentary contact switch or key.

Egress:

b. Retract latch of electrified lock by momentary contact switch or key.

6. Set DE-06 (Door Fire Rated, and Hinges) 1200A

Each door to have:

Quantity	Item	Type
*	Hinges	4.5

Notes:

a. Architectural Hardware by Others

END OF SECTION 11 1900

SECTION 11 1910
DETENTION HOLLOW METAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Detention security hollow metal doors, frames, and panels as specified and as shown in the contract drawings.

B. Single Source Responsibility: The work of this section is to be included with the work of Section 111900 Detention Hardware and shall be assigned to the single responsibility of a qualified Detention Equipment Subcontractor.

1.2 RELATED SECTIONS

A. Section 03 3000 - Cast In-Place Concrete

B. Section 03 400 – Precast Concrete

C. Section 04 2000 - Unit Masonry

D. Section 051000 - Structural Steel Framing

E. Section 061053 - Miscellaneous Rough Carpentry.

F. Section 08 7100 – Door Hardware

G. Section 08 8000 - Glazing

H. Section 09 9600 – High Performance Coatings

I. Section 11 1900 - Detention Security Equipment

J. Division 26 - Electrical

K. Section 28 1300 - Electronic Access Control

1.3 DEFINITIONS

A. DES: Detention Equipment Subcontractor

B. HMMA: Hollow Metal Manufacturers Association.

C. NAAMM: National Association of Architectural Metal Manufacturers.

D. DHI: Door and Hardware Institute.

E. AWS: American Welding Society

F. NFPA: National Fire Protection Association

G. AHJ: Authority Having Jurisdiction (Refer to NFPA 80 for definition)

1.4 ACTION SUBMITTALS

A. Product Data for each type of product:

1. Manufacturer’s material specifications.
2. Manufacturer's specifications for fabrication and installation.
3. Include data substantiating those products comply with the requirements of this section.

B. Shop Drawings:

1. Provide door and frame elevations and sections.
2. Listing of openings with fabrication and anchorage descriptions.
3. Details of openings.
4. Details of hardware reinforcements, joints and connections, and lite cut-outs.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data:

1. Notarized statement from the Manufacturer attesting to conformance with the requirements, standards and testing required by this section.
2. Provide a reference list showing detention projects for which the manufacturer has supplied security hollow metal. Include dates of completion.
3. Notarized statement that manufacturer is a member of NAAAM and will conform to the NAAAM standards for fabrication methods and product quality control.

B. Test Reports:

1. Statement from a nationally recognized independent testing laboratory, certifying that door and frame assemblies meet the standards and performance requirements specified.

1.6 QUALITY ASSURANCE

A. Detention Equipment Subcontractor

1. Upon request, the DES shall provide a list of ten (10) representative completed law enforcement type firing range equipment installations in continuous use for five (5) years, with name, address and phone number of the Owner for each project.
2. The DES shall be an authorized installer by the manufacturer.

B. Manufacturer

1. The manufacturer must meet the following qualifications: Manufacturer shall have experience in the design, fabrication, construction of detention hollow metal products of the quality and scope required on this project, with a minimum of ten similar (10) law enforcement projects completed within the past five (5) years.
2. Manufacturer is a member of NAAMM and subject to quality performance requirements.

3. Manufacturer to meet the standards set by the Hollow Metal Manufacturers Association (HMMA), a division of the NAAMM for fabrication methods and product quality control.
4. Manufacturer's welders currently qualified under AWS D1 or certified under CSA W47.1-92 Classification 2.1 to perform the type of work required.

C. Quality Criteria

1. Openings requiring a fire protection rating:

a. Provide labeled fire door assemblies conforming to NFPA 80, Fire Doors and Fire Windows.
b. If a door assembly does not qualify for appropriate labeling do not proceed with fabrication unless approved by the Architect.

2. Openings in a means of egress: Conform to NFPA 101.

D. Job Site Quality Verification

1. At the Owner's option, a door at the job site may be selected at random and sawn in half or otherwise taken apart for verification that construction is in accordance with specifications. If the door construction conforms to the specifications, the Owner will reimburse the Contractor for the cost of a new door. If the door construction does not conform to the specifications, the Contractor shall remove every detention door from the project and provide new doors conforming to the specification.

1.7 REGULATORY REQUIREMENTS

A. Fire-Rated Door Assemblies: Where fire-rated door assemblies are indicated or required, provide fire-rated door and frame assemblies that comply with NFPA 80 and have been tested, listed, and labeled in accordance with NFPA 252 by a recognized independent testing and inspection agency acceptable to the AHJ.

B. Where fire-rated door or frame assemblies are indicated or required but essential detention features such as security glazing or accessories do not meet the criteria for labeling, if acceptable to the architect and approved by the AHJ, provide equivalent construction and "Certificate of Equivalence" along with specific documentation in the shop drawing submittal of why each door or frame assembly does not meet labeling criteria.

1.8 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at project site with DES and installers to review installation procedures.

1. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

2. Review temporary protection requirements for detention hollow metal during and after installation.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping: Carton, crate, or palletize hollow metal to provide protection in transit and during storage at the job site.

B. Acceptance at site:

1. Conform to NAAMM/ HMMA 840.
2. Inspect hollow metal for damage. Minor damage may be repaired provided finished goods are equal to undamaged goods and are acceptable to the Architect.

C. Storage and protection:

1. Conform to NAAMM/HMMA 840.
2. Do not use non-vented plastic or canvas shelters which could create a humidity chamber.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Products of the following manufacturers will be acceptable provided they furnish the certifications and test reports necessary to document conformance with the requirements of this specification:

1. Claborn Manufacturing, Hartselle, AL
2. CM Detention Products, Shorewood, IL
3. Trussbilt, Inc, Maplewood, MN

B. Substitutions: Submit under provisions of Section 01600.

1. Products of other manufactures will be considered for approval if they conform to the manufacturer's qualification shown in Part 1 and if information required under “quality assurance” is submitted not less than ten days prior to bid due date.

2.2 TESTING AND PERFORMANCE

A. ASTM F 1450.

1. Certify to successful completion and conformance to the security grades and test load requirements for the specified security grade.

a. Include the following tests:

1) 7.1 Bullet penetration (where door assemblies are specified or shown to be bullet resistant).
2) 7.2 Door assembly impact test.
3) 7.3 Door static load test.
4) 7.4 Door rack test.
5) 7.5 Door assembly fire test (where door assemblies are specified or shown as fire rated).
6) 7.6 Door assembly and hardware tool attack test (Testing of individual door and frame components is acceptable).
7) 7.7 Door edge crush test.

2. Provide door assemblies constructed the same as the test door assemblies.

a. Where door assembly cannot be certified as complying with ASTM 1450 because of additional specified requirements, provide proof of satisfactory completion of ASTM testing

along with a certification from the manufacturer attesting that the assemblies are the same as the tested assemblies except for the modification...

B. Fire Door Assemblies.

1. In addition to the ASTM certification, certify that fire rated door assemblies meet or exceed the requirements of ASTM E-152 and UL10 C. Provide listing by Underwriters Laboratories or other recognized testing agency having a factory inspection service and acceptable to the AHJ.

C. NAAMM

1. Comply with ANSI/NAAMM HMMA 863 “Guide Specifications for Detention Security Hollow Metal Doors and Frames,” except as otherwise indicated.

D. Welding

1. Comply with welding standards as define in AWS D1.1 and D1.3, CSA W47.1and RWMA, Resistance Welding Manual.
2. Welds shall have complete penetration and fusion.
3. Remove parent metal when testing welds to failure.

2.3 SECURITY GRADES

A. Conform to the security grade requirements of ASTM F 1450:

1. Security grade 1:
   a. Door face sheet: Minimum 2.3 mm (12 gauge) thickness.
   b. Frame: 3.1 mm (10 gauge) thickness.

2. Security grade 2:
   a. Door face sheet: Minimum 2.3 mm (12 gauge) thickness .
   b. Frame: 2.3 mm (12 gauge) thickness.

3. Security grade 3:
   a. Door face sheet: Minimum 1.7 mm (14 gauge) thickness.
   b. Frame: 2.3 mm (12 gauge) thickness.

4. Security grade 4:
   a. Door face sheet: Minimum 1.7 mm (14 gauge) thickness.
   b. Frame: 1.7 mm (14 gauge) thickness.

B. Refer to Schedule in Part 3 for required security grades.

2.4 BASIC MATERIALS

A. Steel fabrications:

1. Conform to “Guide Specifications for Detention Security Hollow Metal Doors and Frames”, ANSI/NAAMM HMMA 863.

B. Galvannealed:

1. Galvanneal coating in the following areas:

a. Exterior doors and frames.
b. Interior doors and frames subject to corrosive or high humidity conditions
c. Other doors, frames, and components specified as galvanized

2. Conform to “Guide Specifications for Detention Security Hollow Metal Doors and Frames, ANSI/NAAMM HMMA 863".

C. Supports, anchors, and fasteners:

1. Manufacturer's standard, not less than 1.3 mm (16 gauge) thickness, galvanized.
2. Exposed fasteners: Torx® security type.

D. Finish:

1. Conform to “Guide Specifications for Detention Security Hollow Metal Doors and Frames”, ANSI/NAAMM HMMA 863.
2. Treat surface to assure maximum paint adhesion.
3. Coat inside and outside surfaces of the frame and outside surfaces of the door with a rust inhibitive primer which meets or exceeds ASTM B117 salt spray for 150 hours and ASTM D1735 water fog test for organic coatings for 200 hours. Fully cure to develop maximum hardness and abrasion resistance prior to shipment.

2.5 HARDWARE PREPARATION:

A. Conform to “Guide Specifications for Detention Security Hollow Metal Doors and Frames” , ANSI/NAAMM HMMA 863.

B. Minimum thickness and size for hardware reinforcements:

1. Mortise hinges and pivots:

a. Minimum 3/16" thick x 1.5” x 10" high.
b. Frame reinforcement: full width of the frame. .
c. Provide additional reinforcement and bracing for top hinge by welding a 1" x 1" x 3/16" back-up angle to the inside of the frame

2. Surface applied security hinges: 1/4" plate.
3. Locking device hangar attachments: per device manufacturer's template or installation instructions.
4. Lock fronts and door reinforcement for closers: Minimum 2.3 mm (12 gauge) thickness.
5. Internal reinforcements for surface applied hardware; Minimum 2.3 mm (12 gauge.) thickness. Reinforcement for door pulls shall be not less than 1 1/2" x 12".
6. Strike or keeper: Minimum 3/16".
7. Frame reinforcement for closers: Minimum 3/16" x full width of the opening.
8. Flush bolt reinforcements: Minimum 3/16".
9. Frame mounted electric lock pockets: Minimum 3/16" steel back plate or manufacturers’ standard 3.1mm (10 gauge) thickness, one-piece lock pocket meeting ASTM test requirements.

C. Preparation for electrified hardware:

1. Conform to “Guide Specifications for Detention Security Hollow Metal Doors and Frames” ANSI/NAAMM HMMA 863.
2. Provide lock pockets and covers for frame mounted electrified locks. Fabricate pockets to allow a minimum of 1 3/4 inches above and below lock for wiring connections.
3. Do not cut away the lock edge reinforcing channel more than necessary to pass lock.

4. If cylinder extensions are not specified for locks keyed on two sides, provide 6” x 6” minimum recessed access to second cylinder.

D. Prepare the face of the door for cylinders, operating trim, and turn pieces.

2.6 FRAMES

A. Material thickness: As required by specified security grade

B. Design and Construction: Conform to “Guide Specifications for Detention Security Hollow Metal Doors and Frames”, ANSI/NAAMM HMMA 863.

C. Silencers: Provide rubber door mutes, 3 per single door frame, 2 per double door frame.

D. Back Coating:

1. Back Coat frames which are to be filled with grout or installed in concrete or masonry walls.
2. Material: Water resistant bituminous coating unless otherwise approved by the Architect.
3. Back coating may be factory or field applied.

2.7 DOORS

A. Face Sheet Thickness: As required by specified security grade.

B. Design and Construction:

1. Conform to “Guide Specifications for Detention Security Hollow Metal Doors and Frames”, ANSI/NAAMM HMMA 863.
2. Steel Stiffeners Provide either of the following:

    a. Continuous, vertically formed steel sections, formed of minimum 1.o mm (18 gauge) thick steel, spanning the full thickness of the interior space between door faces, spaced no more than 4" apart and securely fastened to both face sheets by spot welds spaced a maximum of 3" on centers vertically.
    b. Continuous truss design with minimum 0.3 mm (28 gauge) thick webs. The webs of the truss shall contact each door face at a maximum of 2 3/4" on centers and be securely fastened to both face sheets by spot welds spaced a maximum of 3" on centers vertically.

C. Openings:

1. Conform to “Guide Specifications for Detention Security Hollow Metal Doors and Frames”, ANSI/NAAMM HMMA 863.

2.8 PANELS

A. Fabricate panels of the same materials and construction as specified for the doors.

2.9 CLEARANCES AND TOLERANCES

A. Unless otherwise specified or required by Code, edge clearances and manufacturing tolerances for swinging doors, shall Conform to “Guide Specifications for Detention Security Hollow Metal Doors and Frames”, ANSI/NAAMM HMMA 863.

2.10 HARDWARE LOCATIONS

A. Unless otherwise shown or required by Code, locate hardware in accordance with “NAAMM 830-87: Hardware Preparation and Locations for Hollow Metal Doors and Frames.”

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine the conditions under which security hollow metal doors and frames are to be installed. Notify the Architect in writing of conditions which may be detrimental to the satisfactory and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prior to installation, examine frames and correct for size, swing, squareness, alignment, twist, and plumbness.

B. Back coat frames, if not done by manufacturer, with material specified in Part 2 prior to installation.

3.3 INSTALLATION/ERECTION

A. Install in accordance with final shop drawings and manufacturer's instructions, and as specified.

B. Frames:

1. Comply with the "Installation and Storage of Hollow Metal Doors and Frames", NAAMM HMMA 840.
2. Place frames prior to construction of enclosing walls and ceilings.
3. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set.
4. Install a minimum of two wood frame spreaders as shown in the installation guides. Do not use temporary bottom shipping spreaders for installation.
5. Fully slush (grout) frames. Hand trowel a grout of 4" maximum slump consistency in place.
6. Install fire rated frames in accordance with NFPA 80 "Fire Doors and Windows".
7. Install anchors at locations and in quantities specified or shown on drawings.

C. Doors:

1. Fit doors accurately in their respective frames in accordance with the "Installation and Storage of Hollow Metal Doors and Frames", NAAMM HMMA 840.
2. Install fire rated doors in accordance with NFPA 80 "Fire Doors and Windows".
3. Maintain specified door clearances, except for special conditions otherwise noted.

3.4 FIELD QUALITY CONTROL

A. Check installation of frames for squareness, alignment, twist, and plumbness

1. Use a level to check door frames.
2. If installation is not within the tolerances specified under “Preparation”, remove and reinstall the frame in accordance with the specified tolerances.

B. Check that edge clearances for swinging doors do not exceed that specified under “Manufacturing Tolerances” in Part 2 of this specification. Only metal hinge shims may be used to maintain clearances.

C. Verify that glazing sealant is pick resistant type.

3.5 ADJUSTING AND CLEANING

A. Keep hollow metal surfaces clean and free of grout, tar, or other bonding material or sealer. Clean grout or other bonding material off of frames and doors immediately following installation.

B. Leave work clean and in proper operating condition. Remove defective work and replace with new material. Defective work includes but is not limited to doors and frames which are warped, bowed, or damaged.

C. Finish smooth exposed field welds and touch up with rust inhibitive primer.

D. Touch up primed or painted surfaces which have been scratched or marred during installation. Use rust inhibitive primer.

3.6 SCHEDULE OF SECURITY GRADES

A. Security Grade:

1. Refer to Part 2 for security grade requirements
2. Security grade:
   a. Security grade 1 for doors.

END OF SECTION 11 1910

SECTION 11 1940
SECURITY AND SCREEN WALLS AND DOORS

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included:
   1. Labor and materials required to furnish and install security screen walls, swing doors, and sliding doors including installation hardware and all components and accessories required for a complete and proper installation.

1.02 SUBMITTALS

A. Manufacturer shall submit shop drawings, showing details of attachment to surround materials and elevations showing scope of project.

B. Manufacturer’s specifications and other data needed to prove compliance with the specified requirements.

C. Samples of materials as may be requested without cost to owner: frame sections, woven rod panel, fasteners, mullion section, corner section, etc.

1.03 WARRANTY

A. The operation of the barrier supplied by the manufacturer on this project is warrantied for one year against any proven defective material or parts, as called for in the specifications and approved shop drawings.

PART 2 PRODUCTS

2.01 APPROVED MANUFACTURERS

A. Specification is based on products as manufactured by Kane Innovations Corp. "Vantage Wall" and "Vantage Wall Door.".

B. Substitutions: See section 01 6000 Product Requirements.

2.02 MAIN FRAME

A. The main frame shall be built-up tubular type, measuring 1 3/4" x 2 ½", with fixed concealment plates. The open channel frame members shall be formed of not less that 12 gauge sheet steel. The corners of the open channel frame members shall be continuously welded on both sides and dressed smooth. Braces, which are similar to the frame, shall be furnished when required.

B. Concealment plates of 10 gauge steel shall be applied to the back of the frame to complete the tubular shape.

2.03 FINISH

A. All interior and exterior surfaces of the main frame, rods and concealment plates shall be thoroughly cleaned and bonderized in a five-step process. The surfaces shall then receive one coat of primer and an electrostatically applied thermoplastic, polyester powder coating which shall be applied and baked to a hard mar-resistant finish in one of the manufacturer’s standard colors as selected by Architect.

2.04 INFILL

A. Woven rods fabricated from double crimped 3/8” diameter low carbon, mild steel rods woven in 2 inch open spaces.

2.05 INFILL ATTACHMENT

A. Woven rod panels shall be installed symmetrically into the slotted main frame. Slots shall be centered according to the rod pattern. Each rod shall penetrate into each slot where it contacts the main frame. Every rod shall be welded into the slot at both ends where it penetrates the main frame.

2.06 HARDWARE

A. Each barrier shall have all necessary installation hardware, including fastening screws. Prepare each door for hardware specified in Section 11 1920.

B. Each barrier shall come fully assembled and tested from the factory.

C. See drawings for location of swing door in Booking and sliding doors in Sallyport.

PART 3 EXECUTION

3.01 INSPECTION

A. Verify that openings are dimensionally within allowable tolerances, plumb, level, clean, provide a solid anchoring surface and are in accordance with approved shop drawings.

3.02 INSTALLATION

A. Installation shall be by a contractor experienced in the installation of detention screens.

B. Install in accordance with approved shop drawings and specifications.

C. Plumb and align faces in a single plane and erect screens square and true, adequately anchored.

D. After completion of installation, screens shall be adjusted, in working order and clean.

END OF SECTION

SECTION 11 4000

FOODSERVICE EQUIPMENT

PART 1 GENERAL

1.01 WORK INCLUDED: Provide labor, equipment, appliances and materials, and perform all operations in connection with the execution of the Work as stated and as represented in the drawings and specifications including that which is reasonably inferred; install and coordinate all equipment in Section 11 4000.

A. Equipment: Fabricate, deliver, unload, uncrate, assemble, set in place and level ready for final connection by mechanical and electrical trades.

B. Coordination: Coordinate mechanical and electrical rough in services, manufactured equipment and fabricated equipment construction, equipment bases, curbs, ceiling heights, depressed areas, sleeves, wall openings, refrigeration lines, service access, existing building conditions that affect equipment, and all other building conditions required to accommodate the Section 11 4000 equipment including new, existing, Owner furnished, vendor furnished and future equipment with other trades; cut holes in equipment to accommodate pipes, drains, electrical conduit and outlets as required.

C. Schedule: Perform work in a timely manner consistent with the construction schedule, submit written notice of any manufacturer or construction related problems that are causing a delay in the equipment delivery or installation; substitutions for failure to order equipment in a timely manner are not acceptable.

D. Permits, Licenses and Inspections: Secure and pay for tests, permits and inspections required by authorized regulatory agencies and directly related to the construction and installation of the Section 11 4000 foodservice equipment work.

E. Document Inconsistencies: When drawings and specifications contain conflicting requirements, request written clarification; provide the better quality or greater quantity of work or material; costs incurred by failure to clarify conflicting requirements are the equipment contractor's responsibility.

F. Model Number Changes and Manufacturer Sales or Bankruptcies: When equipment specified is no longer available, the Owner reserves the right to accept the manufacturer's replacement or equipment from a manufacturer specified as equal; the Owner reserves the right to reject equipment when a specified manufacturer is sold, when sale is pending, when filing for Chapter 7 or 11 status, and receive equipment from a specified equal manufacturer.

1.02 RELATED WORK SPECIFIED IN MECHANICAL AND ELECTRICAL SECTIONS

A. Services and Connections: Extending utility lines from rough in locations to connection points on the equipment and final connections, including indirect wastes to floor drains and installation of faucets and backflow prevention devices, unless otherwise specified.

B. Interconnections: Between equipment and remote components.

C. Disconnection: Existing equipment that is relocated or removed.

1.03 DEFINITIONS

A. Equal: Must be comparable in critical dimensions, capacity, features, utilities and operation; if equal is submitted, pay all costs required to modify work of any trade affected to accommodate equal.

B. Exposed: All visible surfaces — includes surfaces behind cabinet doors when the doors are open.

C. Foodservice Equipment Contractor (FSEC): Person or organization identified as such in the Agreement as providing the Section 11 4000 equipment

D. Fabricated Equipment: Equipment that is not a standard catalog item and must be constructed by a singular authorized fabricator from Article 2.01, Paragraph B at their shop or on the job site to conform to the Contract Documents.

E. Manufactured Equipment: Equipment offered as a catalog item, but which is built to size for each project and generally requires a shop drawing

F. Buy-out Equipment: Equipment offered as a catalog item by a manufacturer, including items requiring minor modifications.

1.04 REGULATORY REQUIREMENTS

A. Laws and Ordinances: Comply with laws, ordinances, rules, codes and regulations relating to the performance of the Work; rulings and interpretations of the enforcing agencies are considered a part of the regulations; no extra charge will be paid for furnishing items required by the enforcing agency.

B. Minimum Standards: Notify the Owner's Representative prior to equipment purchase and/or installation of any item that does not comply with the applicable regulations, including but not limited to the following:
1. National Sanitation Foundation (NSF): Equipment and installation; affix the NSF label to each equipment item
2. Underwriters Laboratory (UL): Electrical equipment and/or components
3. American Gas Association (AGA): Gas fired equipment and installation
4. American Institute of Electrical and Electronics Engineers: Electrical wiring and devices included with the equipment
5. American Society of Heating, Refrigeration and Air Conditioning Engineers, Inc. (ASHRAE): Refrigeration systems
6. American Society of Mechanical Engineers (ASME): Boilers
7. National Electrical Code (NEC): Electrical wiring and devices included with the equipment
8. National Fire Protection Association (NFPA): Exhaust hood and fire protection systems
9. American Society of Tested Materials (ASTM): Metals
10. American National Standards Institute (ANSI): Materials
11. Occupational Safety and Health Agency (OSHA): Equipment and installation
12. Sheet Metal and Air Conditioning Contractors National Association (SMACNA): Equipment and installation where required
13. American Disabilities Act (ADA): Equipment and installation where required
14. International Building Code (IBC) and Standard Building Code (SBCC): Equipment and installation where required
15. Intertek Testing Services (ETL)
16. Safe Drinking Water Act: Lead-free plumbing fittings, faucets and fixtures or more stringent state/local codes where applicable

17. US Energy Independence Act 2007: Walk-in Refrigerator and Freezers and Refrigeration Systems

1.05 SUBMITTALS

A. General: Manufacturer or fabricator changes are not acceptable after submittal review and acceptance without written authorization from Owner's Representative.

B. Schedule: Submit within thirty (30) days from award of Contract; identify key dates and tasks that must be completed by others in order to meet the equipment installation schedule.

C. Review: Stamp and sign each submittal indicating it has been checked for conformance to the specifications, field dimensions, compatibility with other equipment, and coordination with other trades and services.

D. Revisions: Incorporate corrections noted by the Owner's Representative and resubmit new sets for review; repeat until corrections are incorporated.

E. Electronic shop drawings submittals - submit separate submittals per manufacturer
1. Submittal one to include:
   a. Equipment brochure
   b. Equipment plan and schedule, rough-in plans and schedules and special conditions plan
   c. Hood, walk-ins, floor troughs and refrigeration
   d. Remaining custom equipment shop drawings
2. Submittal two to include:
   a. Fabricated equipment shop drawings and protector shelves

F. Drawings
1. General
   a. Match the contract drawings sheet size
   b. Leave a 3” x 8” space for review stamps
   c. Lettering not less than 1/8” high
2. Floor Plan and Schedule
   a. Scale: ¼” = 1’ 0”
   b. Number equipment and include a schedule on the same sheet if possible
   c. Use Architect's dimensioned plans to prepare plan drawing; verify field dimensions
3. Rough in Plan
   a. General: Provide a utility symbol legend; list the utility requirements, along with the equipment item number on a line extending from the symbol; show exact rough in locations and heights; stub out of walls wherever possible; make allowances for valves, fittings and other required components specified under Mechanical and Electrical Sections; if utilities are already installed, field measure locations and indicate on plan, noting any objection to installed location.
   b. Scale: ¼” = 1’ 0”
   c. Equipment Included: Show requirements for specified, Owner furnished, existing and future equipment; include equipment layout on drawing
   d. Format: Provide separate drawings for mechanical and electrical rough-in plans and schedules.
   e. Dimensioning: Dimension utility rough ins installed under floor from either existing walls, exterior walls or from column line centers; dimension other rough ins from new walls
   f. Code Compliance: See Article 1.04
   g. Coordination: Refer to the architectural, electrical and mechanical engineering drawings for this submission; verify that the correct utility services are available

for equipment ordered; verify existing building conditions; coordinate any changes required to accommodate equipment provided

h. Interconnections: Include connection diagrams for equipment where one or more items are interconnected by Mechanical and Electrical Trades
i. Sleeves and Conduits: Include requirements for beverage lines, refrigeration lines and any other equipment interconnections

4. Special Conditions (building details): Show finished dimensions of bases, depressions, curbs, special height walls, wall backing, and wall openings for equipment; ¼" = 1' 0" scale; coordinate with other trades; include equipment layout on drawing
5. Equipment Shop Drawings
   a. Scale: Detail fabricated and manufactured equipment in plan, elevation and end view at ¾" = 1' 0" or larger; show sections at 1 ½" = 1' 0" or larger
   b. Detail: Show fabricated equipment dimensions and materials, manufacturer and type of hardware, and other pertinent data as specified and as required for construction; where fabricated equipment adjoins other equipment, indicate partial plans and elevations to illustrate the junction condition; show stone/solid surfacing dimensions, locations, dimensions of cutouts, and countertop seam locations, required locations of support and blocking members, edge profiles, and installation details and methods; identify colors and finishes
   c. Organization: Indicate equipment by item number and arrange on sheets in numerical sequence
   d. Built-in and Counter-mounted Equipment: Show on fabricated equipment elevation and section drawings; dot in countertop equipment on plans; detail built-in/drop-in equipment supports and relationship to quartz top
   e. Field Dimensions: Equipment dimensions are subject to adjustments required by field dimensions and understructure components; take measurements and coordinate with finished building conditions; field dimensions completed by a company/person approved by the custom fabricator; circle any dimensional changes on initial and subsequent submissions
   f. Hood Fire Protection System: Submit complete detailed shop drawings including system description, configuration and system component locations; after review by design team, incorporate comments and submit to fire authorities having jurisdiction for system approval prior to fabrication
   g. Walk-ins: Show ceiling panel lay-outs and all control and switch locations

G. Written Materials
1. Itemized Bid: If not required during bid submittal, provide itemized bid within 10 days of bid award date; include freight and installation within each item.
2. General: Submit two (2) bound copies for review; if submitted electronically, they are to follow the same format as the hard copy.
3. Equipment Brochure
   a. Equipment List: Include item number, quantity and manufacturer
   b. Cover Sheet: Submit a typewritten sheet — copies of project specification are not acceptable — for each item with item number and equipment description to include model number, quantity, optional features, special construction, installation and utility service requirements for manufacturer provided; include Owner furnished, existing and future equipment
   c. Manufacturer's Catalog Sheet: Circle relevant utility requirements, dimensions and accessories for each item; do not include advertising or sales sheets; mark item number and quantity required; mark out equipment not being supplied
   d. Organization: Arrange sheets in numerical sequence; tab every 25th item
4. Operation and Maintenance Manual – submit prior to equipment demonstrations
   a. Service Agents: List manufacturers alphabetically with tabs; list equipment type; identify local service agent; list the name, address and telephone number authorized to service the equipment; list FSEC when there is no other service agent

b. Parts Catalog, Operating and Maintenance Instructions: Include manufacturer's original instructions for buy-out and manufactured equipment; organize alphabetically by manufacturer
c. Certificate of Warranty: Provide for each piece of refrigeration equipment per Article 1.07 B & C

5. Utility Rebate Documents: For applicable equipment, provide and prepare manufacturer's rebate registration documents for submission by Owner to utility company; include pertinent equipment model/serial numbers, utility data, installation dates and other information needed to complete application.
6. LEED Information: (if required)
   a. Refrigeration: For each item of refrigeration (self-contained and remote) identify type of refrigerant used and pounds of refrigerant used by each refrigeration system.
   b. Spray Rinse Faucets: Identify gallons per minute flow rate.

1.06 SUBSTITUTIONS

A. Procedure: Submit a written request to the Owner's Representative for approval not less than ten (10) days prior to the bid date; include a description of the proposed substitute, drawings, equipment cutsheets, performance test data and any other data or information necessary for complete evaluation; list separately construction and performance features that do not meet or exceed the specified item.

B. Approval: Approval or rejection of a proposed substitution is vested in the Owner's Representative whose decision is final and binding; determination may or may not express the reason for the decision; approval by Addendum or Change Order only; verbal approval is not binding.

C. Responsibility: If proposed substitution is approved, pay all costs required to modify work of any trade affected to accommodate substitution.

1.07 WARRANTY/CORRECTION PERIOD

A. General: Warranty equipment and installation with full parts and labor for one (1) calendar year from date of acceptance by Owner's Representative; Owner's acceptance is defined by first date of foodservice facility operation; inoperable equipment is not considered "accepted"; inoperable equipment includes, but is not limited to, inadequate training and demonstration, defective materials and improper installation.

B. Walk-in Refrigeration and Freezer Systems: One year full system parts and labor warranty to cover all components and installation; five (5) year compressor/condenser warranty to cover parts and materials only; service available 24 hours per day, seven (7) days per week; contract begins on date of acceptance by Owner's Representative.

C. Other Equipment: Compressors/Condensers: Five (5) year warranty; first year to include labor and materials without charge to Owner.

D. Fire Protection System: Warranty and required inspections for one (1) year; provide materials without charge to Owner.

E. Correction Period: When the complete breakdown of a piece of equipment occurs, perform service within 24 hours; make other repairs within one week.

F. Service Agreement: Service agents listed in the Operation and Maintenance Manual must perform service as described above; repairs and/or replacements not made within the specified time will be corrected by other means and the Section 11 4000 contractor is responsible for reasonable costs incurred.

G. Defective Equipment: If within the first year of operation the piece of equipment has not been fully operational for 6 continuous months, the FSEC will replace the unit at their expense.

PART 2 PRODUCTS

2.01 QUALIFIED FABRICATORS

A. Qualifications: Experience in similar work; produce custom fabricated equipment in one shop.

B. Authorized Equipment Fabricators: The following companies are approved custom stainless steel equipment fabricators; request for substitutions can be made per Article 1.06. Must be NSF (or ETL Sanitation) listed for counter construction and UL (or ETL) listed fabricator. Fabricator must prewire counters to a single point connection; see Article 2.11C.

ACS Custom Fabrication
(651) 265-0603

FSF Manufacturing
(407) 971-8280

IEI Institutional Equipment Inc.
(630) 771-0990

Servco Companies
(314) 781-3189

C. Coordination Requirements: Field dimensions and installation must be done by a fabricator approved person/company.

2.02 MATERIALS

A. General: Furnish new materials free from faults and defects in materials and workmanship

B. Metals
1. Gauges: U.S. Standard Gauge; not more than 5% plus or minus from thickness indicated below:

Gauge	Thickness	Gauge	Thickness
10	0.1406	16	0.0625
12	0.1094	18	0.0500
14	0.0781	20	0.0375

2. Stainless Steel: ANSI Type 304, number 4 finish, 180 grit, extra low carbon, non-magnetic, 18% chrome, 8% nickel, corrosion resistant alloy steel; flat, first grade and free of buckles and surface imperfections
3. Galvanized Sheet Steel: Zinc coating, smooth, free of runs, blisters, excess spelter and uncoated spots or patches; recoat welded or damaged members; finish with two coats of epoxy based gray Hammertone paint
4. Aluminum Sheet Metal: ASTM sheet and plate; ASTM extrusions; 0.40 mil clear anodized finish unless otherwise specified
5. Stainless Steel Tubing: Type 304, number 4 finish 180 grit; seamless or welded; 16 gauge; annealed, ground smooth and polished; heat treated and properly quenched to eliminate precipitation; drawn true to size and roundness and polished with concentric grain

6. Black Iron Angle: Ductile in quality; free of hard spots, runs, checks, cracks and other surface defects; clean and properly prime with rust inhibiting primer; finish with two coats of epoxy based gray Hammertone paint

C. Sealant:
1. General: Dow Corning, Silastic or G.E. RTV 108 silver color; Type S Grade NS, Class 25; comply with Food and Drug Administration Regulation 21 CFR 177.2600 for food contact areas or equal by Kason 3700 Series Rubbaseal silicone
2. Walk-in Penetrations: Low expansion, closed cell polyurethane foam

D. Glass: Tempered 3/8" thick, unless noted otherwise

E. Plastics: Polycarbonate or acrylic as specified; ¼" thick

F. Cutting Board: Richlite R50 or equal by Paperstone leather or per item specification, ½" thick; size as specified; 1" diameter finger hole when used below drawers

G. Bolts, Screws and Nuts: Unacceptable on exposed surfaces; use same composition as the metal to which they are applied; space to insure suitable fastening and to prevent bulging of the metals fastened; cap threads with a zinc plated combination hexnut-lockwasher; cap screw threads that are not visible or readily accessible with a standard lock washer and nut; wherever bolts or screws are welded to the underside of trim or tops, neatly finish the reverse side; depressions at these points are not acceptable

H. Rivets: Unacceptable as a method of fastening

I. Sound Deadening
1. Tape Sealant: Schnee Morehead, Inc., Model SM5227 Tacky Tape or Component Hardware Model Q85-5225 Tacky Tape
2. Spray-On or Brush-On: Component Hardware Model Q75-1366; Latex Sound Deadener; NSF Listed; sink bottoms only; do not coat beyond sink front cove

2.03 FABRICATION - GENERAL

A. Final Coordination: After approved shop drawings are issued, communicate subsequent changes to the Owner's representative before fabrication begins.

B. Quality Standards: Include necessary reinforcing, bracing, welding, number and spacing of uprights and crossmembers for adequate strength; construct tops, shelves, exterior panels, doors and drainboards of a single metal sheet when possible; except where removable, secure flat surfaces to vertical and horizontal bracing members by welding or other approved means to eliminate buckle, warp, rattle and wobble; equipment subject to rattle or wobble is not acceptable; overlapping materials are not acceptable; unless specified, exposed joints on countertops, cabinet bases and overshelves are not acceptable.

C. Welding: Heliarc method; same composition as materials welded; complete welds, strong and ductile, with excess metal ground off and joints finished smooth to match adjoining surfaces; free of mechanical imperfections such as gas holes, pits, runs and cracks; same finish as adjoining surfaces.
1. Spot Welds: 3" maximum spacing
2. Tack Welds: Minimum ¼" welding material at 3" maximum spacing

D. Butt Joints: Unacceptable as a method of fastening on fabricated and manufactured equipment

E. Tops: 14 gauge seamless stainless steel; fully weld with edges as specified; pitch drainboards ¼" per foot; 1" maximum pitch
   1. Edges: Detail SD-1 and as specified
   2. Backsplash: Detail SD-2; continuously weld rolled edges abutting splashes

F. Sinks: Detail SD-9 & SD-10

G. Scrapping Trough:
   1. Trough with Disposer: Integral with draintable; pitch to sink; chrome-plated water inlets per elevation; silver saver; stainless steel trough covers if shown; slope trough from 3" to 6" at disposer sink; disposer sink with stainless steel cover per SD-64; weld disposer collar into sink

H. Grain of Polishing: Run in the same direction on all horizontal and on all vertical surfaces; where table or sink tops join at right angles, terminate the finish in a mitered edge; polish grain consistent in direction throughout the length of the backsplash and sink compartment.

I. Framework
   1. Draintables and Worktables: Detail SD-3
   2. Serving Counters and Cabinet Bases: Detail SD-7

J. Counter/Table Construction
   1. Legs: Detail SD-4
   2. Crossrails: Detail SD-4
   3. Undershelves:
      a. Welded: Detail SD-5
      b. Removable: Detail SD-6

K. Cabinet Construction: Inaccessible open areas are not acceptable; no exposed shelf standard screws
   1. Standard Construction: Detail SD-7, SD-26 & SD-28
   2. Piece Construction: When specified, Detail SD- 8 & SD-27
   3. General
      a. Sink Enclosure: Detail SD-12, SD-12a & SD-13
      b. Utility Curb: Detail SD-30
      c. Channel Base: Detail SD-77; coordinate recessed areas in bases; inaccessible open areas are not acceptable
      d. Access Panels: Detail SD-29

L. Doors
   1. Hinged Solid: Detail SD-17; door face flush with cabinet body
   2. Sliding: Detail SD-21; removable for cleaning
   3. Hinged Louvered: Detail SD-19 or 20; door face flush with cabinet body
   4. Hinged Perforated Panel: Detail SD-19A; door face flush with cabinet body

M. Drawers: Detail SD-14; drawer face flush with cabinet body

N. Elevated Shelves:
   1. Wall Shelves: Detail SD-25
   2. Table Mounted Shelves: Detail SD-22, SD-23 & SD-24

O. Built In Equipment: Install per manufacturer's recommendations, Article 2.11 and project details.
   1. General: Coordinate to provide adequate ventilation, service access and support structure; submit written notification of any design conditions that are likely to prevent proper operation or that void equipment warranty; provide supplemental fans if

required for proper operation; equipment contractor is responsible for proper operation of equipment
2. Food Wells: Connect drainlines to ¾" diameter manifold and extend to a ball valve; provide chrome plated handle for drain valve and locate in stainless steel recessed cup in counter mullion; countertop temperature greater than 175°F within 2" of well opening is not acceptable

P. Counter Mounted Equipment: Ferrule openings to accommodate cords, wiring, and/or piping.

2.04 FABRICATION – REFRIGERATION

2.05 HARDWARE COMPONENTS

A. Cap Nuts: Component Hardware Model Q31 Series with lock washer

B. Casters: 5" diameter polyurethane tire swivel casters; grey tire; minimum 250# capacity; NSF approved; models as follows.
1. Stem Caster: Jarvis & Jarvis Model 5-40-213G-19A or Component Hardware Model CMS4-5RPB
2. Stem Caster with Brake: Jarvis & Jarvis Model 5-40-213G-VL-19A with VertiLok brake or Component Hardware Model CMS4-5RBB with brake
3. Plate Caster: Jarvis & Jarvis Model 5-30-213G-PLT2 or Component Hardware Model CMP1-5RPB
4. Plate Caster with Brake: Jarvis & Jarvis Model 5-30-213G-VL-PTL2 with VertiLok brake or Component Hardware Model CMP1-5RBB with brake

C. Drain Valve Recessed Cup: Vollrath, Model 47536.

D. Drain Valve Handle: Chicago, Model 634; 3" diameter, four arm metal cross handle.

E. Glass Capping: Component Hardware Model B70-1001; stainless steel.

F. Locks: Component Hardware Model P30 Series; stainless steel faced; master keyed

G. Pot Rack Hooks: Component Hardware, Model J79-4115, single prong; Model J77-4401, double prong; stainless steel.

H. Switch/Receptacle Housing
1. Recessed: Component Hardware Model R73 1210
2. Pedestal: Component Hardware Model R58-1010

I. Cash Drawer Assembly without Tray: Component Hardware Model S95-Y001

2.06 MILLWORK

A. Materials
1. Core Material: Medex exterior resin medium density fiberboard; conform to ANSI A208.2.3.3.4, as manufactured by ROSEBURG Forest Products (Ph: 800/245-1115) or equal by Norbord MDF-MR (Ph: 800/367-6338)
2. Plastic Laminate: NEMA LD3 1/16" Type I general purpose, Grade 10, color-through and high pressure; color, pattern, and finish as specified
3. Backing Sheets: NEMA LD .020" thick, Type V, Grade 91 plastic laminate; apply on all surfaces not covered with plastic laminate; coordinate color with exposed surface color; comply with NSF Standard 35
4. Adhesive: Formica 100 or 150

5. Grain/Pattern: Coordinate on all equipment furnished under this section so that grain/pattern runs in same direction throughout project
6. Wood Frames and Counter Edges
   a. Exposed: Species, grade and finish per item specification or detail
   b. Unexposed: Solid, choice white pine free from knots and defects
7. Edge Banding: Doellken PVC 3mm thickness with beveled edge, color to match adjacent plastic laminate

B. Construction: Detail SD-171, SD-172, SD-173 & SD-174; 1977 AWI Premium Grade Standards; factory assemble parts and prefinish; flush type fronts and overlapping ends; ¾" core material base cabinet, ends and dividers with corner joints between frame members fully lock jointed, glued and screwed; dado and glue cabinet backs into sides and bottom; scribe countertops and backsplashes; secure countertops to base cabinet from underside; fully cure surfaces prior to installation.

C. Hardware
1. General: Utilize expandable dowels for screws on all cabinet hardware installed on MDF
2. Hinges
   a. Standard: Blum or equal by Grass Institutional Series per Detail SD-169 and SD-179, minimum 110° opening, concealed casework hinges; utilize doweled cup and hinge screws when installed on MDF
   b. When Specified: Component Hardware Model M75-5003
   c. Double Acting: Bommer Industries Part No. 7122 & 7322 gate spring pivot; chrome plated
3. Catches: Only required with Component Hardware hinge, either is acceptable
   a. Non Magnetic: Component Hardware Model M22-2420; adjustable tension
   b. Magnetic: Component Hardware Model M30-2400; heavy duty; self-aligning
4. Pulls: Hafele, Model 124.02.920, anodized silver finish, Component Hardware Group, Model P46-1010, brushed stainless, Epco-Engineered Product Co. DP-41-SS-3, anodized stainless steel, or as specified
5. Locks: Component Hardware Model P30 Series; stainless faced; master keyed as specified
6. Legs: Component Hardware Model A77-5048-C stainless steel with adjustable hex foot.

2.07 REFRIGERATION

A. Walk In Refrigerator & Freezer Construction
1. Size: Per plan; 8'-10" minimum finished interior height; interior dimensions must accommodate shelving shown on plan
2. General:
   a. Wall and Ceiling Panels (and floors, if applicable): 4" thick modular panels joined by not less than three (3), cam lock devices; cam locks accessed from inside walk in; cover access holes with gray plastic caps or white plastic to match white walls or ceiling; gasket to seal between panels; foamed in place CFC reduced urethane insulation, self-extinguishing UL classified according to ASTM and U B C 52.3 with flame spread of 25 or less and smoke development of 450 or less; R 25 or greater for refrigerators; R 32 or greater for freezers.
   b. Ceiling Panels: Span shortest distance; utilize over-partition joined panels to minimize suspended ceilings; use 5" thick ceiling panels on spans greater than 15'-0"; maximum unsupported span of 17'-4"; suspended ceiling seams siliconed and tar taped.
   c. Finishes:
      (1) Exterior Finishes: 22 gauge, Type 304 smooth stainless steel per Article 2.02B, where exposed; vertical grooves in panels are not acceptable; 22 gauge galvanized steel on unexposed surfaces

(2) Interior Finishes
(a) Wall Panels: .04" (before embossing) stucco embossed aluminum
(b) Ceiling Panels: .032" smooth aluminum with two coats of white, baked polyester enamel

3. Wall Protectors (If Specified): 1-1/2" wide extruded aluminum rail with vinyl insert; field positioned; secure with unexposed sheet metal screws; end caps
4. Diamond Tread Wall Overlay (If Specified): Provide 1/8" thick, 48" diamond-tread plate aluminum on exposed exterior; secure with oval countersunk head stainless steel screws and seal joints with silicone; install after stainless steel coved base and overlap stainless steel coved base by 1/2".
5. Floor: See item specifications for conditions that apply to this project; prefabricated freezer floor panels must have R-28 rating or greater; verify that building is transit level prior to installing walk ins; notify Owner and Architect if sub floor ventilation or heating is required for walk in freezers; FSEC to verify that sub-floor installation conditions are acceptable prior to installing floor and box; identify any discrepancy in writing to Owner's Representative prior to installation
   a. Floorless with High Screeds: Per Detail SD-184, install extra high foam screeds in building floor recess; size screeds to extend above finished floor; coordinate height of wall panel with recess
   b. Recessed Exposed Prefabricated Floor: Per Detail SD-186, install in building floor recess; coordinate height of wall panel with recess; 4" thick floor with urethane insulation as described in Article 2.07, para. A.2; 16 gauge stainless steel interior; 3/4"□marine plywood reinforcing below top; 1,000 lbs. per square foot rated load; 30" minimum length interior ramp; non-skid strips on ramp and traffic aisles
6. Stainless Steel Coved Base: 22 gauge stainless steel on interior and exterior; 4" minimum height, 8'0" maximum length; 3/4" diameter cove; secure without exposed fasteners; overlap seams 1", miter joints at corners
7. Door: R-25 or greater for refrigerators; R-32 or greater for freezers; In fitting, flush mounted, not less than 36" x 78" clear opening; 22 gauge smooth stainless steel with no exposed fasteners; replaceable magnetic gasketing on top and sides; replaceable double sweep gasket at bottom; door jamb with replaceable heater wires; stainless steel reinforced heated threshold flush with finished floor; frame-mounted door heater control switch, label control switch as "door heater adjustment" with incremental temperature level indicator control markings (high, medium, low)
   a. Vision Panel: Not less than 150 square inches; heated; triple pane glass
   b. Hinges: Three, Kason Model 1346 with stainless steel cover; lift-off adjustable hinge; cam-lift spring- assisted self-closing hinges with 7-9/16" long strap; use Kason load chart to verify hinge model selection for specific door weight and width
   c. Handle: Kason 1236 or Kason 27C with steel reinforced plate inside door panel or equal by Dent, lever action door handle with cylinder lock, padlock hole and interior safety release; provide common key for all walk-in doors
   d. Door Closer: Kason 1092 or Kason 1094 with stainless steel hook
   e. Kickplate: 1/8" thick diamond tread plate aluminum on both sides of door and frame; extend from door bottom to door handle; secure with counter sunk oval head stainless steel screws; seal perimeter with silicone
   f. Incandescent Light: Delete lamp holder, bulb and shield entirely from door panel
   g. Electrical: Wire in conduit concealed in door panel to junction box top of ceiling per Detail SD-191
8. Thermometer: -40°F to 99°F; flush-mount in door panel on latch side, 60" above floor; conceal wire through door panel to junction box on top of walk-in; provide 24 volt transformer; wire from display through door panel, and extend sensor a minimum of 6'-0" from the door, in multiple walk-in compartment application with interior door, locate display for inner compartment in outer compartment door panel below display for outer compartment
   a. Digital Thermometer with Alarm and Building Alarm Interface: Modularm 75LC

b. Digital Thermometer with Alarm and Building Alarm Interface: Modularm 75LC with MD-1 motion detector and IP-1 with illuminated push button for panic alarm and lights

9. Pressure Relief Port: Provide heated relief port in freezers and non-heated in refrigerators; locate in exposed wall
10. Lights: Provide minimum (or greater) foot candle light levels as required per current FDA food code or per local code requirements; see item specification for lights required for this project
    a. LED: Component Hardware Model LED48X754-CL-N; 52" long fixture; LED strips and driver replaceable without tools; 6000 lumens; locate as shown on plan; lighting intensity 10 foot candles or light level necessary to meet code.
    b. Motion Sensor: Kason Model 1901A
11. Enclosure Panels & Trim Strips: Secure with no exposed fasteners; close space between walk in and ceiling with enclosure panels, maximize panel width and minimize panel height; if access is required, supply only two 36” wide removable panels; close vertical space between walk in panels and building walls with trim strips; enclosure and trim same material as wall panels per Detail SD-193.
12. Penetrations and Seams: Penetrations sealed with closed cell minimum expanding spray foam; seams sealed completely with Dow Corning 999A silicone glazing sealant to prevent condensation; tar tape on ceiling joints
13. Receptacle for Heater Tape: Provide weather tight receptacle for freezer coil drainline heater
14. Electrical: Prewire lights, alarm, door, window and port heaters, and receptacle for heater tape in ½” OD PVC conduit above walk in to junction box; ready for final connection by Electrical Trades per Detail SD-191; conduit within walk in is not acceptable
15. Sprinkler Heads: When required, cut holes for sprinkler heads; provide stainless steel trim cap and seal holes per Article 2.07A, para. 13

B. Refrigeration System: Complete operating system

1. Condensing Unit:
    a. General: Condenser type per item specification and as detailed below; hermetic compressors for 1/2 h.p. and under, standard scroll compressors (digital when included with item specification) for 3/4 h.p. and above; internal starting contactors and thermal overload protection; splash lubrication system using POE-32 polyolester synthetic refrigeration oil; oil sight glass; removable oil drain plug; label indicating oil used; high/low pressure control; suction line filter; suction and discharge service valves and copper/brass vibration isolators; receiver with fusible plug or relief valve; liquid line shut off valve; sight glass; molecular sieve filter dryer; main power supply fused disconnect switch; wiring throughout installed in conduit bolted to unit; R-448A or equal U.S. Environmental Protection Agency (EPA)-approved and compatible refrigerant for medium and low temperature applications
    b. Outdoor: Air-cooled condenser with ball bearing permanently lubricated fan motor; fan motors under 1 h.p. must use electronically commutated (EC) motors or permanent split capacitator-type (PSP) motors; fan cycle controls where ambient temperatures do not fall below 15 degrees F; headmaster valve and oversized, heated, insulated receiver and lines where ambient temperatures fall below 15 degree F; crankcase heater and low ambient temperature controls to ensure proper and efficient operation; weather-protected, structural steel, welded frame powder-coated or painted with two coats of rust inhibiting paint or polyurethane; Type 304 or 316 brushed stainless steel housing with hail guards over louvered panels (galvanized or painted steel housings are unacceptable); lifting provisions at each corner to facilitate installation; OSHA-approved condenser fan guards; for projects located within 20 miles of salt air, provide protective coating on aluminum condenser fins to prevent corrosion.
2. Evaporator: Forced convection style; match to condensing unit and suspend with air discharged parallel to the ceiling; lifetime sealed motors with inherent motor

protection; evaporator fan motors of under 1 h.p. and less than 460 volts must use electronically commutated (EC) motors; enclose coil section and fans within aluminum housing
   a. Refrigerator: Air defrost
   b. Freezer and Low Temperature Refrigerator: Electric heater and controls for positive automatic defrost
   c. Installation: Hang coils per manufacturer's recommendations using plastic or nylon threaded rod; spread coil weight evenly over ceiling panels; support long span ceiling panels as required
   d. Refrigerator Drainline: Run copper drainline from evaporator to building floor drain; exit walk in as close to floor as possible; trap below coil inside of walk in; paint drainline with non-toxic paint, color to match wall panels; secure to walk-in wall
   e. Freezer and Low Temperature Refrigerator Drainline: Trap outside of walk in; wrap with Frostex heater tape, manufactured by nVent and wired for continuous "on" operation; insulate with ½" thick Armaflex, Type AP insulation; secure to walk-in wall
3. Refrigeration Lines: Interconnect evaporator to condensing unit; pipe between components as required with refrigeration grade, degreased, sealed, Type L-ACR, hard drawn copper tubing; slope horizontal runs toward condensing unit one-half inch per 10'-0" of length so that refrigerant or oil cannot drain back into evaporator from suction line; trap suction line as it exits evaporator coil; trap bottom of vertical runs of 5' 0" or more; if vertical run is 15'-0" or more, provide additional trap every 10'-0"; isolate refrigerant piping connected to compressors using copper/brass vibration isolators properly mounted at both ends; entire system cannot be exposed to atmosphere for more than (15) minutes; remove piping end caps just prior to soldering; braze all connections with Sil-Fos-15 solder; pass a continuous flow of nitrogen gas through the area being brazed or soldered; dismantle valves during soldering; clean pipe by pulling a clean cloth through its entire length; blow out piping prior to testing and insulating using dry nitrogen gas and pull a vacuum through the lines; insulate refrigeration lines with Armaflex, Type AP insulation or equal by Rubatex, ¾" thick for refrigerators and ¾" thick for freezers and low temperature refrigerators; verify acceptability of Armaflex, Rubatex or Aerocel EPDM insulation with local codes; if refrigeration lines pass through a return air plenum, use Pittsburgh Corning Foamglass, 2" thick insulation when Armaflex is unacceptable; install sections of insulation with 10"long metal guards at hanger points; support piping at intervals of 8'-0" or less based on pipe size and code requirements, using Uni-Strut channel hangers; secure piping to channel hangers using galvanized clamps with neoprene grommets separating the piping from the clamps; seal all joints and seams with Armstrong 520 adhesive; for outdoor use, cover insulation with VentureClad, 1507B, black, VentureClad line set tape (www.venturetape.com) insulate and heat trace outdoor lines where temperatures fall below -15°F; where VentureClad is not permitted by local code, provide Airex E-Flex Guard insulation.
4. Refrigeration Controls
   a. Walk-in Refrigerator: Provide demand defrost controller by KE2 Therm Industries or equal for refrigerator evaporators, one per evaporator; controller mounted on front of coil without exposed conduit and labeled as "demand defrost controller"; temperature sensors to be factory installed within evaporator; controller to include microprocessor with onboard web server allowing system parameters to be monitored remotely utilizing standard TCP/ IP protocols HTML and XML communication; liquid line solenoid valve and thermostatic expansion valve for each evaporator
   b. Walk-in Freezer and Low Temperature Refrigerator: Provide demand defrost controller by KE2 Therm Industries or equally for refrigerator evaporators, one per evaporator; controller mounted on front of coil without exposed conduit and labeled as "demand defrost controller"; temperature sensors to be factory installed within evaporator; controller to include microprocessor with onboard web server allowing system parameters to be monitored remotely utilizing

standard TCP/ IP protocols HTML and XML communication; liquid line solenoid valve and thermostatic expansion valve for each evaporator; heater block-out relay to prevent heater from operating while compressor is running; heat exchanger and accumulator

c. Remote Reach-in and Roll-in Refrigerator and Freezer Systems: Provide time clock for positive "off" cycle air defrost

5. System Operation: Complete system capable of maintaining the interior temperature specified
   a. Refrigerators: 35° F operating temperature ± 2° with a 16 18 hour running time; design to operate at 100° F ambient temperature; size evaporator for 10° TD maximum
   b. Freezers: -10° F operating temperature + 2° with an 18 hour running time; design to operate at 100° F ambient temperature; size evaporator for 10° TD maximum
   c. Low Temperature Refrigerators: 28° F. operating temperature ± 2° with a 16-18 hour running time; design to operate at 100° F ambient temperature; size evaporator for 10° TD maximum
6. Installation - see item specification condition that applies to this project
   a. Interior: Mount on 1 ½" x 1 ½" x 1/8" angle iron rack; locate racks on floor or wall as specified in manner acceptable to the Owner's Representative; paint racks with two coats of rust inhibiting paint; provide two color etched plastic nameplate identifying equipment served by each refrigeration system
   b. Exterior: Install and bolt down condensing units in location specified; coordinate requirements for mounting with Owner's Representative; roof curbs and penetrations are not in Section 11 4000
   c. Ventilation: Notify the Owner's Representative prior to installation if ventilation is not adequate
   d. Diagrams: Furnish four (4) copies of refrigeration system control wiring and piping diagrams; frame one copy in Plexiglass and mount near refrigeration system location; chain one copy of operational maintenance manuals to system rack

C. Buyout Equipment:
1. General: Coordinate adequate ventilation around all refrigeration/freezer compressors; submit written notification of any design conditions that prevent proper operation or void equipment warranty; provide supplemental fans if required for proper operation; Equipment Contractor is responsible for proper operation of equipment
2. Remote Compressor: All components, interconnections and controls to provide complete operating system; condensing unit and lines per Article 2.07, para. B; coordinate refrigerant with buyout equipment; operator accessible on/off switch with pilot light; counter mounted compressor on slide-out channel frame; system to maintain code approved temperatures

2.08 EXHAUST HOODS

A. Construction: Fully welded; all 18 gauge Type 304 stainless steel per Article 2.02, para. B stainless steel; #4 finish including exposed rear; exterior corners fully welded, ground and polished; length and depth per plan; provide duct collar; conceal plumbing and wiring; heat sensors installed at each hood duct collar to automatically activate the exhaust fan whenever cooking operations occur.

B. Exhaust and Supply Requirements: Design for use and function at project engineered volume. Manufacturer's approved representative to measure volumes at multiple locations across the front face of the filters and average the readings and provide documentation to the consultant indicating both the measured air volumes and the design air volume at each duct collar.

C. Code Compliance: See Article 1.04.

D. Fire Damper (When Specified): Fusible link activated; Underwriters Laboratories listed; microswitch on duct collar for interwiring by Electrical Trades to shut down exhaust fan when damper is closed

E. Lights: Provide minimum (or greater) foot candle light levels as required per current FDA food code or per local code requirements; prewire in conduit to junction box on top of exhaust hood; recessed vapor proof fixtures; tempered glass diffuser; wall mounted light and fan switches provided by others.
1. LED: By hood manufacturer; suitable for grease hood; all fixtures for entire project must emit the same color.

F. Design: See item specification for designs required for this project.
1. Filter Hoods: Underwriters Laboratory classified stainless steel self- draining removable baffle filters; full length concealed self-draining trough pitched to built-in recessed stainless steel grease cup; one filter removal tool per project

G. Hood Installation
1. Mounting: Height as shown, not to exceed 7' 0" above finished floor; free from vibration and distortion; coordinate with ceiling construction and ceiling heights; provide stainless steel hanger brackets, mounting angles and steel hanger rods
2. Trim: Conceal fasten 18 gauge stainless steel trim or enclosure panels from top of hood to ceiling
3. Interconnections: Make all plumbing and electric interconnections between adjacent sections, ready for singular final electrical and plumbing connections by respective trades

H. Performance Guarantee: Hood manufacturer guarantees that the exhaust hood will capture grease, smoke and vapor from the cooking equipment shown on the plan at the specified air volumes without the addition of end panels, extensions to the hoods or other appurtenances. If after installation, testing and balancing the hood cannot effectively capture grease, smoke and vapor, it is the responsibility of the hood manufacturer to determine the reason the hood does not capture. If the manufacturer believes it is due to a defect in the building ventilation system, the hood manufacturer must identify the defect and prove it exists to the satisfaction of trade contractors and Consultant. If the hood manufacturer cannot prove that a defect exists, the manufacturer will pay for all costs associated with modifying the exhaust hood, ductwork, fan, controls, make-up air system, wiring and all associated work required for the exhaust hood to capture grease, smoke and vapor from the cooking equipment.

2.09 FIRE PROTECTION SYSTEMS

A. General: The piping and detection lines built into the hood at time of fabrication include all piping, elbows, tee's, U.L. grease seals, conduit and corner pulleys for the protection of the hood plenum(s) and exhaust duct(s); fire system and components supplied by a local authorized fire protection company.

B. Code Compliance: See Article 1.04; comply with NFPA 13, 17 and 96, local codes and Underwriters Laboratory; submit shop drawings to code authorities and secure approval prior to system fabrication.

C. Systems: See item specification for system required for this project.
1. Wet Chemical: Automatic and remote manual actuation; stainless steel control cabinet; cable and conduit; manual reset relay when applicable; installation and certification by factory trained personnel; mount control cabinets at the ceiling where shown on plan without exposed piping and conduit; minimum of one remote flush

mounted manual pull station per system; coordinate location with local fire authorities and Electrical Trades; provide permanent label on both pull station and hood indicating which hood is activated when pull station is used, plastic name plates with not less than 1/2" high white recessed lettering; glue one name plate adjacent pull station and second name plate directly to exhaust hood in a location visible by foodservice worker.

D. Piping: Schedule 40 black pipe and fittings; all exposed under the hood piping chrome plated with no exposed threads.

E. Nozzles at Fire Dampers: On wet chemical and dual agent systems, if hoods have fire dampers at duct collars, provide nozzles above and below fire damper; provide welded 3/8” diameter schedule 40 black iron sleeve in ductwork for nozzle above damper.

F. Gas Shut-off Valve: Automatic electrically or mechanically activated per item specifications; installed by Mechanical Trades; equip electrical gas shut-off valve with 15-second power interruption.

G. Follow-up Inspection: Include two semi-annual maintenance checkouts of the system by factory authorized personnel conforming to the recommendations as outlined in the manufacturer’s specifications and manuals; include permits, drawings, and testing by authorized fire protection company as required by authority having jurisdiction

H. Warranty: See Article 1.07, para. D.

2.10 CONVEYORS - Not Used

2.11 UTILITY SERVICE REQUIREMENTS

A. General
1. Interconnections: Interconnect equipment utility lines between equipment sections to single connection point; materials consistent with specifications
2. Performance: Install heated and motor operated equipment as required for efficient and stable operation; provide additional vents, guards, deflectors and other accessories as necessary whether or not such items are called for on the drawings or specifications; show additional modifications on the Shop Drawings; notify the Owner's representative in writing if design prevents proper operation prior to installation
3. All plumbing components must be lead-free to conform to Safe Water Drinking Act or more stringent state/local codes where applicable
4. Coordination: Verify incoming water pressure and temperature prior to equipment installation; provide written communication to Owner’s Representative if conditions will adversely affect equipment operation

B. Plumbing
1. Fabricated/Manufactured Equipment
   a. Connection Access: Provide access openings for mechanical connections
   b. Piping: Install horizontal piping at the highest possible elevation and not less than 6” above floor; conceal piping; no tool marks or more than one visible thread at exposed fittings; bright polished chrome plate exposed piping and fittings
   c. Faucets: Available through Standard Plumbing Suppliers
      (1) Prep Sink:
         (a) Chicago 540-210661AB
         (b) T&S B-0230-0CS8-CR MOD B-0199-02
         (c) Component Hardware KL54-8108-SE1

(2) General Use/Dump Sink (Splash Mounted):
(a) Chicago 540-210664AB
(b) T&S B-0331-CR MOD w/134X & B-0199-02
(c) Component Hardware KL54-8101-SE1
(3) General Use/Dump Sink (Deck Mounted):
(a) Chicago 201-201289AB
(b) T&S B-2854-134XA-CR
(c) Component Hardware KL41-8101-SE1
(4) Hand Sink (Splash Mounted):
(a) Chicago 631-210665AB
(b) T&S B-0230-187XWSC4
(c) Component Hardware KL54-8100-RE4
(5) Hand Sink (Deck Mounted):
(a) Chicago 786-E35XKABCP
(b) T&S B-2866-05CR-WS
(c) Component Hardware KL84-8102-RE4
(6) Pot and Pan Sink:
(a) Chicago 540-218254
(b) T&S B-0231-BB-CR
(c) Component Hardware KL34-8012, modify with lever handle in lieu of

d. Wastes: Adjust handle length when required
(1) Drain: Component Hardware Encore QUIK-FLO Rotary Drain Model DBN-8000-SPI Capped Overflow Outlet with Flat Strainer; or Fisher Manufacturing Model 28932
(2) Overflow: Component Hardware E50-1000; or Fisher Manufacturing Model 22322

e. Accessories/Components: Chrome plate exposed fittings
(1) Water Inlets: Locate above the positive water level to prevent siphoning
(2) Backflow Prevention: Where conditions require a submerged inlet, provide a code approved check valve or backflow prevention device with the fixture to prevent siphoning; provide with T & S B-0461 angle slip flanges where plumbing penetrates backsplash; set flanges so top of vacuum breaker is 4” above splash or per local code; tighten set screws and silicone to backsplash.

f. Water Filtration: Provided by Mechanical Trades thru central RO System

g. Gas Quick Disconnect: Dormont, Series security gas quick disconnect hose with restraining chain or equal by T&S Brass; 4’-0” long with suitable length restraint to facilitate cleaning; mount restraint to prevent it lying on floor; sized to accommodate connection on equipment

h. Water Quick Disconnect: Dormont security water quick disconnect hose with restraining chain or equal by T&S Brass Series; 4'-0" long or required length; sized to accommodate connection on equipment; one hose per connection.

i. Gas Pressure Reducing Valves: Furnish appropriate models in 5” to 15” water column pressure limits for installation by Mechanical Trades if not factory installed

j. Gas Fired Ranges: Provide rear gas connection and stainless steel manifold end caps unless otherwise specified

k. Indirect Wastes: Extend the following indirect wastes/drainline: condensate hood, hot and/or cold well, fabricated counter/equipment, countertop ice machines, and specified beverage equipment; all sink waste lines are by plumbing trades

C. Electrical

1. General: Underwriters' Laboratories (UL) listed and comply with National Electrical Code, Standards of National Electrical Manufacturers' Association and American Institute of Electrical and Electronics Engineers; wire, wind or construct equipment to conform to available electrical services; furnish wiring and connection diagrams with equipment; provide equipment rigid and free from objectionable vibration and noise

2. Plug in Equipment: Furnish with cords attached; match plugs to receptacles; coordinating cords and plugs are the FSEC's responsibility; modify cord to a suitable length; on mobile equipment; provide suitable length restraint to facilitate cleaning; mount restraint to prevent it lying on floor.
3. Fabricated Equipment: Prewire internally; furnish and install electric outlets and receptacles; run lines to a junction box, load center panel, starter, or disconnect switch for one final power connection by Electrical Trades; neatly tag wires showing item number, voltage characteristics and load information; interconnections between sections of fabricated counters by FSEC; furnish transformers for equipment unavailable in building electrical characteristics
   a. Built In Equipment: Install and interconnect electric controls, switches, receptacles or other units furnished separately; wire in concealed conduit to accessible junction point
   b. Motor Driven Appliances and Electric Heating Units: UL listed control switch or starter; exposed fused disconnect at motors larger than ½ hp or per code requirements; furnish line switches, fittings and connections when not part of the equipment for installation by Electrical Trades
   c. Motors: Drip-proof, splash-proof or totally enclosed type, having a continuous-duty cycle; ball bearings except small motors which may have sleeve bearings; windings impregnated to resist moisture; enclose when exposed to dust, lint, water or other matter; mount on vibration elimination pads
   d. Conduit: Code approved; conceal from view
   e. Switches and Controls: Internally wire equipment to a thermostatic control and/or on/off switch with red indicator light; locate where shown; label function with plastic nameplates with not less than ¼" high white recessed lettering, and glue to adjacent surface
   f. Cover Plates: Stainless steel
   g. Outlets and Receptacles: Commercial grade ground fault interrupt outlets mounted where shown; wire to separate j-box; Commercial grade surge suppression receptacles for point of sale equipment
   h. Light Fixtures: Provide ballasts and 3500° Kelvin lamps at 82 CRI (Color Rendering Index); install non-breakable sleeves or coated lamps over food areas
      (1) Wall Cabinet: Alkco, Series SS HP-100/200 Series/RSW
   i. Load Center: Locate in a separate compartment; prewire electrical components built into or set on the counter to panel; conceal conduit; UL listed, three phase, four-wire with grounded copper buss; individual ground fault interrupt breakers for each service load; identify equipment serviced on each breaker; snap-in type circuit breakers with thermo magnetic quick make/quick break trip; provide circuit breakers rated at 10,000 KAIC interrupting capacity; size each breaker for 125% of the connected load; minimum of two spare 20 amp circuits; balance the loads on each phase; shunt trip breakers for items under hood; install panel in accordance with electrical codes and regulatory requirements.

PART 3 EXECUTION

3.01 SITE INSPECTION

A. Field Measurements: Field measure foodservice space prior to equipment construction; conform to finished building conditions; submit written notification to Owners Representative if building conditions prevent equipment from functioning properly.

B. Site Conditions: Verify that surfaces, prepared openings, finished building dimensions, and roughed in utilities are ready for equipment; coordinate equipment with building openings and dimensions; construct and deliver equipment in sections sized to site limitations.

C. Utilities: Verify that voltages, air volumes, water temperature and water, steam, and gas pressures are as required for equipment; coordinate changes to ensure that equipment operates properly

D. Acceptance: Beginning of installation means acceptance of site conditions.

E. Responsibility: Assume the expense of changes to equipment and/or cutting and patching walls, partitions, ceilings and floors necessary to receive and successfully operate equipment, caused by failure to coordinate with site conditions.

3.02 INSTALLATION

A. Qualifications: Experience in similar work, including field welding.

B. Code Compliance: Conform to current Standards and Revisions established by the National Sanitation Foundation, Ann Arbor, Michigan, and to prevailing local codes and regulations.

C. Sealing: Seal equipment that abuts a wall or other fixed equipment with silicone sealant per Article 2.02, para. C; ¼" maximum width.

D. Trim: Material to match equipment surface; trim equipment in wall openings, recesses or abutting a wall that cannot be effectively sealed with silicone; exposed fasteners are not acceptable; unacceptable as a substitute for accuracy and neatness.

E. Schedule: Comply with the Owner's construction schedule; notify the Owner's Representative in writing, not less than thirty (30) days prior to the scheduled deadline if there is a reason the schedule cannot be met.

F. Cutting and Patching: Cut and drill tops, backs, or other elements for service outlets, fixtures, and fittings; cut and patch foodservice equipment as required for equipment installation or service

G. Protection: Protect equipment from damage.

H. Damage and/or Loss: Replace or repair items that are lost or damaged prior to Owner acceptance

I. Factory Supervision: Provide factory authorized service agent supervision for installation of jobsite assembled conveyors, flight-type dishmachines and pulpers; include a thorough check of utility connections, pressures and overall installation.

J. Custom Fabrication: The fabricator must conduct or approve the person/company responsible for taking field dimensions and installing their equipment.

3.03 EXISTING EQUIPMENT

A. Disconnection: By appropriate trade; specified in other sections of these specifications.

B. Reused: Disassemble, if required, remove and store equipment until ready for installation; reassemble and set existing equipment in place ready for final connection; install in the same working order as when removed from service; prepare and submit a packing list identifying each piece of equipment removed and any attachments or accessories removed with it; equipment that is not in good working order should be noted; submit packing list signed by the Owner's Representative and the Section 11 4000 Contractor.

C. Not Reused: Owner's Representative has the option to retain existing equipment; authorized demolition contractor will remove and dispose; obtain written authorization from Owner's Representative to remove equipment from site.

3.04 CLEANING

A. Remove masking or protective covering from stainless steel and other finished surfaces; wash, clean and polish equipment; polish glass, plastic, hardware, accessories, fixtures and fittings prior to the inspection and acceptance of the Work. Install existing equipment in the same state as when it was removed from service.

3.05 DEMONSTRATION AND TESTING

A. Demonstration: Schedule times with the Owner's Representative to provide instruction on the maintenance and use of each item; conveyor authorized service agent to demonstrate adjustment and maintenance procedures to Owner's maintenance staff and dishroom supervisor and demonstrate pump adjustment to detergent supplier; demonstrate operation to appropriate inspectors if required; verify that copies of all instructional, operational, maintenance manuals, charts and audio and video media have been provided at least two weeks prior to demonstration as required in Article 1.05, para. G.4.

B. Testing: Test, regulate and put into proper operating condition; calibrate controls, including thermostats; coordinate dishmachine testing with detergent supplier; properly activate water filters per manufacturer's recommendations.

C. Chart of Completion: Provide separate charts for demonstration and testing; include item number, description of equipment, date, person/firm responsible, and Owner's initials; provide charts to Owner, Owner's Representative, and Consultant prior to Owner's acceptance.

3.06 ITEM SPECIFICATIONS

A. NOTE: Provide like equipment items (kettles) and items that directly interface (hoods, raceways, fire protection systems/hood control panels) from same manufacturer. Provide common locks (when specified) on all equipment from the same manufacturer.

B. NOTE: Field dimensions and installation must be completed by a person/company approved by the custom fabricator.

1 RECEIVING CART
Three
Existing; Owner to relocate to position shown on Plan

2 WALKIE PALLET JACK
One
Crown Model PTH 50 Series Model PTH 50 27-48 or equal by Global Industrial or
Lift-Rite*R103
"Substitutions": As approved by Architect prior to bid".

A. Features: Steel construction; 48" high fork length with 27" width; control handle raise/lower; polyurethane steer and load wheels; 5,000 pound load capacity; walk-behind operation

B. Crown Lift Trucks - Minnesota 8650 109th Avenue N. Champlin, MN 55316 651-645-8668
Contact Dealer

3 TILT TRUCK
Two
Rubbermaid Model FG130600BLA w/Lid FG130700BLA or equal by Continental Commercial Products or Global Industries *R103
"Substitutions": As approved by Architect prior to bid".
Features: Heavy duty tilt truck; 1/2 cubic yard, 1400 pound capacity; casters; hinged lid; prison package tamper proof screws

4 DUNNAGE RACK
Seventeen
New Age Model 2000 Series or equal by Eagle Group WDR Series or Lakeside Manufacturing Prisonbilt *R103
"Substitutions": As approved by Architect prior to bid".
Features: Stationary unit; length and width shown on Plan; aluminum construction; five lateral cross bars; minimum 1500 pound capacity; 12" high

5 DRY STORAGE SHELVING
Twenty
Existing; Owner to relocate to position shown on Plan

6 STAINLESS STEEL CORNER GUARD
Three
Fabricate; construct per Plan, Part 2-Products and Standard Detail; modify guard to be rounded at corner; correctional package including tamper proof hardware
"Substitutions": As approved by Architect prior to bid".

7A WALK-IN REFRIGERATOR/FREEZER COMPLEX
One
Thermalrite (Plymouth, MN location) or equal by Thermo-Kool, American Panel or Kolpak *R103
"Substitutions": As approved by Architect prior to bid".

A. Features: Complex size and shape as shown on Plan, constructed, and equipped per Article 2.07; digital thermometer with alarm and building alarm interface; LED lights per Part 2.07A; refer to Manual Sliding Door (Refrigerator), Item #9, Manual Sliding Door (Freezer), Item #13 and Swinging See-Thru Door, Item #14; conduit routed within panels to freezer floor heat control box, 2 locations
B. Floor: Standard Detail SD-184 and SD-188; FSEC to verify that floor conditions are approved prior to installing floor and box; provide any discrepancy in writing to Owner's Representative
C. Finishes: White stucco-embossed aluminum exposed exterior; backing in panels to support freezer floor heat control boxes and stainless steel chase for plumbing vent pipe, verify locations, provide enclosure trim for plumbing pipe; white baked enamel over smooth aluminum ceiling; stucco-embossed aluminum interior walls; galvanized steel on unexposed exterior surfaces; 1/8" thick diamond tread plate, 54" high on exposed exterior and on all interior walls of the Walk-in Complex; secure with countersunk oval head screws and seal joints and edges with silicone; provide diamond tread plate loose for installation at site (with the exception of the door) for coordination with coved base; install after stainless steel coved base and overlap base by 1/2"
D. Installation: Manufacturer Authorized Installer to install walk-in compartment
E. Correctional Package: Tamper proof hardware
F. Electrical: 120V, 1 phase

7B FREEZER FLOOR HEAT

Two

Echo Electric Supply Company BR 35 or equal by Van Meter, Inc.*R103

“Substitutions”: As approved by Architect prior to bid”.

A. Floor: Floorless with High Screeds; Insulated w/Heat per Standard Detail SD-188; install extra high foam screeds in building floor recess; size screeds to extend above finished floor; coordinate height of wall panel with recess; provide freezer sub-floor heating system set to be energized when the top surface of the depressed concrete slab approaches 40 degrees F; for freezer compartment indicated, provide thermostatically controlled heating cable placed on top of building floor slab and under floor insulation to generate not less than 4 watts per square foot of floor area adequate to provide sub-floor frost protection and prevent condensation and cracking; element enclosed with 3/4" conduit (by Electrical Trades), covered with cement mortar (mortar provided by others) and arranged so that the entire cable can be replaced; control station box with adjustable thermostat, power supply pilot light and heating cable pilot light; tamper proof enclosure to secure control; locate at 48" above finished floor on exterior wall panel at freezer door; pull boxes located at 18" above finished floor concealed in interior wall panel next to latch side of door; area to be heated will determine electrical load

B. Electrical: (2) 208V, 1phase

8 RACKED REFRIGERATION SYSTEM

One

RDT Model RDMC3-05Z-CT3-AEP or equal by Cold Zone both w/Copeland compressor unit; Heatcraft evaporator coil or equal by HTPG *R103

“Substitutions”: As approved by Architect prior to bid”.

A. Features: Properly sized outdoor, air-cooled racked refrigeration system to serve Item #7A, Walk-in Freezer, Cook's Freezer Issuance, Walk-in Tempering Refrigerator, Cook's Refrigerator Issuance, Walk-in Meat and Dairy Refrigerator, Walk-in Produce Refrigerator, Cold Prep Issuance, Bakery Refrigerator and Bakery Freezer; properly sized evaporator coils, tamper proof hardware; system equipped and installed per Article 2.07B (demand defrost system without time clock); network switch and edge manager or equal for connection to BMS

B. Rack: Factory assembled multi compressor system; stainless steel housing and one-piece louvers; prewired control panel with main disconnect, circuit breakers, contactors wired to a single point power connection; prepiped refrigeration lines; each system equipped with an oil separator, headmaster controls and insulated receivers; construct rack to fit tight to wall and size rack to allow 3'-0" minimum aisle at front and end with load center panel

C. Installation: By Manufacturer's authorized installer; coordinate adequate ventilation requirements are met

D. Electrical: 208V, 3 phase (Compressors)
120V, 1 phase (Evaporator Coil)
208V, 1 phase (Evaporator Coil)

9 MANUAL SLIDING DOOR (REF)

One

Jamison Model Mark IV or equal by Franke Door Company or Walk-in Manufacturer *R103

“Substitutions”: As approved by Architect prior to bid”.

A. Features: Refrigerator door; 78” door height; single leaf horizontal sliding door; manually operated; stainless steel door and frame including frame fasteners; stainless steel leading edge guard; 48” high aluminum diamond tread kickplate on door and frame; width and height to accommodate walk in buck opening; direction of operation per Plan; pull handle; polyurethane door insulation; adjustable gasket; adjustable bottom door sweep; padlock on exterior with interior safety release; 14” x 24” view window; 10 gauge stainless steel threshold,

flush mounted with floor; non-corrosive hardware; stainless steel door jams and inside trim; DOE compliant; correctional package including tamper proof hardware

B. Installation: Per Manufacturer's instructions

10 OPEN NUMBER

11 HEATED AIR CURTAIN

Two

Berner Models CHD10-2072E & CHD10-3096E or equal by Mars Air Systems or Curtron *R103

"Substitutions": As approved by Architect prior to bid".

A. Features: Electric heated air curtain, length per Plan; 14" high x 15" deep; (2) 1/2 HP three speed motors; for use with door height up to 10-feet high; built-in fan-off heat selector switch; interior mounting; galvanized steel frame; self-contained aluminum housing with stainless steel finish; plunger type microswitch for automatic on/off control; at overhead door, mount with wall mount brackets with clear PVC side shields; mounting brackets at other location with regular door; thermal overload switch; protected air intake; correctional package including tamper proof hardware (TP); stainless steel wall mounting plate (WMP-SS)

B. Installation: Per Manufacturer's instructions to operate when doors are opened; position as shown on Plan; coordinate support requirements with Architectural trades

C. Electrical: 408V, 3 phase

12 AIR CURTAIN

Two

Berner Model CLC08-1060AA-WIC or equal by Mars Air Systems or Curtron *R103

"Substitutions": As approved by Architect prior to bid".

A. Features: Un-heated air curtain, length per Plan; 14" high x 15" deep; (1) 1/5 HP two speed motor; for use with door height up to 8-feet high; interior mounting; Z-wall adjustable depth brackets, stainless steel finish; galvanized steel frame; self-contained aluminum housing with stainless steel finish; plunger type microswitch for automatic on/off control; mounting bracket; thermal overload switch; protected air intake; acceptable for freezer application; mount within walk in as shown to avoid conflict with sliding doors; correctional package including tamper proof hardware (TP)

B. Installation: Per Manufacturer's instructions to operate when walk in sliding doors are opened; position as shown on Plan; coordinate support requirements with Architectural trades

C. Electrical: 120V, 1 phase

13 MANUAL SLIDING DOOR (FRZ)

One

Jamison Model Mark IV or equal by Franke Door Company or Walk-in Manufacturer *R103

"Substitutions": As approved by Architect prior to bid".

A. Features: Freezer door; 78" door height; single leaf horizontal sliding door; manually operated; stainless steel door and frame including frame fasteners; stainless steel leading edge guard; 48" high aluminum diamond tread kickplate on door and frame; width and height to accommodate walk in buck opening; direction of operation per Plan; pull handle; polyurethane door insulation; adjustable gasket; adjustable bottom door sweep; padlock on exterior with interior safety release; 14" x 24" view window with heat; heater cables around perimeter of door and frame; 10 gauge stainless steel threshold with heated sill; non-corrosive hardware; stainless steel door jams and inside trim; DOE compliant; correctional package including tamper proof hardware

B. Installation: Per Manufacturer's instructions

C. Electrical: 120V, 1 phase (Frostop Heater Cables)

14 SWINGING SEE-THRU DOOR
Three
Jamison Jamoclear *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Swing see-thru acrylic cooler door, 3'-0" wide x 6'6" high; 1" thick, clear, transparent cast acrylic; 16 gauge stainless steel toe plates on front and back of door; molded wood frame reinforced fiberglass door; mount face of door flush with frame casing; bottom sweep type door gasket; rubber door gaskets; 3 chrome-plated hinges mounted on exterior of door; top mounted door closer; door pull on outside; 16 gauge stainless steel push plate on back; furnish lock on outside of door per Owners' requirements; correctional package including tamper proof hardware and special fastener heads
B. Installation: Per Manufacturers recommendation

15 REFRIGERATOR/FREEZER SHELVING
Fifty-four
New Age H. D. Shelving or equal by IMC Teddy Series SSS-L or Lakeside Prisonbilt Series PBWS *R103
"Substitutions": As approved by Architect prior to bid".
Features: Length and width shown on Plan; fully welded aluminum construction; four shelves per unit; 1500 lbs shelf capacity; 72" high posts; 6" platform casters, all with brakes (M6); correctional package tamper proof screws

16 SECURITY FENCE
Three
New Age Custom Fabricate Security Fence or equal by Custom Fabrication *R103
"Substitutions": As approved by Architect prior to bid".
Features: Heavy-duty, all-welded rust proof aluminum extrusions; bolted together with stainless steel tamper proof hardware; door hinged per Plan; telescoping flanged feet to attach to floor and ceiling; includes Adams Rite stainless steel deadlock installed in door, without cylinder, cylinder to match Walk-in doors, FSEC to verify model required and install; provide shop drawing

17 MOBILE DUNNAGE RACK
Six
New Age Model 1207 or equal by Advance Tabco, Choice Equipment or Focus Foodservice *R103
"Substitutions": As approved by Architect prior to bid".
Features: Mobile unit; length and width shown on Plan; fully welded; aluminum construction; four lateral cross bars; 1000 pound capacity; 8-1/4" high; 6" heavy duty platform casters, (2) swivel with brakes, (2) rigid (HD6"); handle for 24" wide unit (1174), to be welded in place; correctional package tamper proof hardware

18 HAND SINK
One
John Boos Model PBHS-W-1410-8OC or equal by Advance Tabco Model 7-PS-70 MOD or Krowne HS-20-LF *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Stainless steel construction; 7" high integral backsplash; chrome-plated P-trap, wall-mounting bracket; strainer-type waste, welded; stainless steel side supports; provide splash-mount hand sink faucet per Article 2.11B; faucet holes on 8" centers; add welded side splashes if required by code
B. Correctional Package: Tamper proof hardware (to include faucet and drain assembly)
C. Installation: Mount 34" above floor

19 MOBILE LUG RACK
Three
New Age Model 1481 equal by PVI Fabricates Model WE70195W-PB or Choice Equipment *R103
"Substitutions": As approved by Architect prior to bid".
Features: Aluminum construction; 8 pan capacity on 7-1/2" centers; 70" high; pan stop; perimeter bumper; **unit to hold Cambro lugs, 18" x 26" x 6" deep; four 5" diameter polyurethane platform swivel casters; correctional package tamper proof hardware

20 FLOOR TROUGH
One
IMC Teddy Model SEC-FT with SG-ADA grating or equal by Gates *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: All components fully welded; stainless steel floor trough, with continuously welded stainless steel seepage flange and weep holes to capture overflow; size and position per Plan; security package to include anchor straps, locking device welded on trough for grating; provide optional stainless steel basket beehive strainer (BBS); built in pitch towards waste; SG ADA grating, with 7/16" clearance between each bar; 304 stainless steel grating construction with 3/16" x 1" high bars and 1/2" stabilizer rods welded at each joint; provide shop drawing
B. Installation: Coordinate location of waste outlets with Mechanical; furnish trough assembly to Mechanical for installation; trough must be flush with finished floor; proper location of the trough is the responsibility of the FSEC

21 SHADOW BOX SECURITY CABINET
One
Fabricate; construct per Plan, Part-2 Products, Elevation and PD-2; correctional package tamper proof hardware
"Substitutions": As approved by Architect prior to bid".

22 WORKCOUNTER W/SINK
One
Fabricate; construct per Plan, Part 2-Products, Elevation and Standard Details; correctional package tamper proof hardware for faucets and drain assemblies
"Substitutions": As approved by Architect prior to bid".

23 WALL CABINET W/SHELF
One
Fabricate; construct per Plan, Part 2-Products, Elevation and Standard Details; provide with lock; correctional package tamper proof hardware
"Substitutions": As approved by Architect prior to bid".

24 MOBILE TRASH BIN
One
Existing; Owner to relocate to position shown on Plan

25 MOBILE EQUIPMENT STAND
One
Piper Products Model 121-23-29TSS or equal by Eagle Group or Custom Fabrication *R103
"Substitutions": As approved by Architect prior to bid".
Features: Stainless steel construction including legs and undershelf; 23-1/4" overall height; 4" diameter polyurethane swivel casters, two with brakes; must accommodate Item #26; correctional package tamper proof hardware

26 BENCH SCALE
One
OHAUS Penn Model ES100L or equal by Kilotech or Industrial Scale Inc. *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Low profile; up to 220 pound capacity bench scale; 20-1/2" x 15-7/10" stainless steel platform; LCD digital display; (2) button operation; 3-wat mounting brackets (scale base, scale platform, any vertical surface); overload/underload indicator; AC adapter; (6) AA batteries, not included; painted steel frame; correctional package tamper proof hardware
B. Electrical: 120V, 1 phase; cord and plug

27 MOBILE WORKTABLE
One
Advance Tabco Model SS-305 or equal by Eagle Group or Custom Fabrication *R103
"Substitutions": As approved by Architect prior to bid".
Features: Length and width per Plan; 36" high; 14 gauge stainless steel top and understructure; stainless steel welded undershelf; stainless steel legs and underbracing; rolled rim edge; paint on sound deadening under top; four 5" diameter swivel casters, two with brakes; correctional package tamper proof hardware

28 UTILITY CART
Eleven
Existing; Owner to relocate to position shown on Plan

29 INGREDIENT DELIVERY CART
Four
Existing; Owner to relocate to position shown on Plan

30 OVEN RACK, DOUBLE
Four
Existing; Owner to relocate to position shown on Plan

31-33 OPEN NUMBERS

34 FOOD CUTTER
One
Existing; Owner to relocate to position shown on Plan; FSEC to verify utilities and include utility requirements on rough-in drawings

35 MOBILE EQUIPMENT STAND
One
Piper Products Model 331-3424 or equal by IMC/Teddy Model SMTS-3030 or Custom Fabrication *R103
"Substitutions": As approved by Architect prior to bid".
Features: Stainless steel construction; stainless steel slides to accommodate 18" x 26" sheet pans, welded to frame; 4" diameter polyurethane swivel casters, all with brakes; must accommodate Item #34; correctional package tamper proof hardware

36 SECURITY FENCE
One
New Age Custom Fabricate Security Fence or equal by Custom Fabrication *R103
"Substitutions": As approved by Architect prior to bid".
Features: Heavy-duty, all-welded rust proof aluminum extrusions; bolted together with stainless steel tamper proof hardware; door hinged per Plan; telescoping flanged feet to attach to floor and ceiling; includes Adams Rite stainless steel deadlock installed in door, without cylinder, cylinder to match Walk-in doors, FSEC to verify model required and install; provide shop drawing

37 BAKERY DRY STORAGE SHELVING **(ADD ALTERNATE)**
Five
New Age H. D. Shelving or equal by IMC Teddy Series SSS-L or Lakeside Prisonbilt Series PBWS *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Length and width shown on Plan; fully welded aluminum construction; four shelves per unit; 1500 lbs shelf capacity; 72" high posts; 6" platform casters, all with brakes (M6); correctional package tamper proof screws
B. Installation: Verify units fit within finished wall dimensions; assemble with bottom shelf 10" above floor or per local health code requirements

38 SECURITY FENCE
One
New Age Custom Fabricate Security Fence or equal by Custom Fabrication *R103
"Substitutions": As approved by Architect prior to bid".
Features: Heavy-duty, all-welded rust proof aluminum extrusions; bolted together with stainless steel tamper proof hardware; door hinged per Plan; telescoping flanged feet to attach to floor and ceiling; includes Adams Rite stainless steel deadlock installed in door, without cylinder, cylinder to match Walk-in doors, FSEC to verify model required and install; provide shop drawing

39 MOBILE MIXING BOWL, 80 QT **(ADD ALTERNATE)**
One
Lakeside PrisonBilt PB713 or equal by Vollrath Model 79800 or IMC/Teddy Model MSB-U80 *R103
"Substitutions": As approved by Architect prior to bid".
Features: 80 quart stainless steel bowl stand, fully welded; one 80 quart stainless steel bowl; (4) 4" diameter heavy duty casters, two with brakes; correctional package tamper proof screws

40 MOBILE HOT/COLD TRANSPORT CART
Thirteen
Existing; Owner to relocate to position shown on Plan; FSEC to verify utilities and include utility requirements on rough-in drawings

41A UTILITY DISTRIBUTION SYSTEM
One
Gaylord Model DH-IM-E3-17.0 (UDS) (Refer to Drawing #22-168901) or equal by Halton or Streivor *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Overhead type, electrical energy distribution system; enclosed in stainless steel chase; size and shape per Plan; U.L. listed; mount bottom edge at 7' high A.F.F.; prewired to final connection point; single point connection; point of use breaker/outlet with actuator knob by Electrical Contractor; ground fault equipment protection; 20", locking cord assembly to accommodate equipment shown on Plan, verify; limited and security assess package; correctional package tamper proof screws
B. Provide shop drawing to Foodservice Consultant for review
C. Electrical: 120/208V, 3 phase

41B UTILITY DISTRIBUTION SYSTEM
One
Gaylord Model DH-IM-E3-19.9 (UDS) (Refer to Drawing #22-168902) or equal by Halton or Streivor *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Overhead type, electrical energy distribution system; enclosed in stainless steel chase; size and shape per Plan; U.L. listed; mount bottom edge at 7' high A.F.F.; prewired to final connection point; single point connection; point of

use breaker/outlet with actuator knob by Electrical Contractor; ground fault equipment protection; 20", locking cord assembly to accommodate equipment shown on Plan, verify; limited and security assess package; correctional package tamper proof screws

B. Provide shop drawing to Foodservice Consultant for review

C. Electrical: 120/208V, 3 phase

42-59 OPEN NUMBERS

60 MOBILE RACK
Sixteen
Existing; Owner to relocate to position shown on Plan

61 PAN STORAGE SHELVING
Three
New Age H. D. Shelving or equal by IMC Teddy Series SSS-L or Lakeside Prisonbilt Series PBWS *R103
"Substitutions": As approved by Architect prior to bid".
Features: Length and width shown on Plan; fully welded aluminum construction; four shelves per unit; 1500 lbs shelf capacity; 72" high posts; 6" platform casters, all with brakes (M6); correctional package tamper proof screws

62 WORKCOUNTER W/SINK
One
Fabricate; construct per Plan, Part 2-Products, Elevation and Standard Details; correctional package tamper proof hardware for faucets and drain assemblies
"Substitutions": As approved by Architect prior to bid".

63 140 QUART MIXER **(ADD ALTERNATE)**
One
Hobart Model HL1400C *R103
"Substitutions": As approved by Architect prior to bid".

A. Features: 140 quart planetary mixer; gray powder coat finish; stainless steel 140 quart bowl; "B" Beater; "D" wire loop whip; "ED" dough hook; bowl scraper; ingredient chute; stainless steel bowl guard; power bowl lift; bowl truck; 20 minute timer, automatic time recall; thermal overload protection; 5 HP motor; (4) fixed speeds plus stir speed

B. Correctional Package: Maximum security; tamper resistant handles and knobs; tamper proof hardware; padlock hasps cover on/off switch and other controls

C. Electrical: 460V, 3 phase

64 WATER METER W/TEMPERATURE RANGE **(ADD ALTERNATE)**
One
Dough Tech Model GT30MIX *R103

A. Features: Water meter, wall mount; water dosing & mixing, up to 999 lbs.; digital flow meter; interactive touch screen; (5-1/4 to 8) gallons per minute; PLC control panel, 33° to 175°F temperature range, temperature compensating; timer & stop watch; includes 100" dispensing hose with hook; 3/4" NPT outlet; stainless steel housing

B. Installation: Verify wall requirements with Architectural Trades prior to ordering

C. Correctional Package: Provide tamper proof hardware; padlock hasps cover controls

D. Electrical: 120V, 1 phase; cord and plug

65 MOBILE TRASH BIN
One
Existing; Owner to relocate to position shown on Plan

66 MOBILE INGREDIENT BIN **(ADD ALTERNATE)**
Four
Piper Products Model 47-150 or equal by Dinex or Baxter *R103
"Substitutions": As approved by Architect prior to bid".
Features: Fully welded stainless steel construction; top edge rolled; bottom edge flanged; one piece fully enclosed rubber bumper; slide off stainless steel cover with rolled edges; coved corners; four, 4" diameter, swivel polyurethane casters, two with brakes; correctional package tamper proof screws

67 SPIRAL MIXER **(ADD ALTERNATE)**
One
Doyon Model AFR100 or equal by Gemini GBE Fixed Series or Hobart *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: 200 pound flour capacity; 264 quart bowl capacity; 15 HP; two speeds; programmable digital control; emergency stop; thermal overload protection; belt driven motor; safety cover with auto-stop; stationary stainless steel bowl, safety guard and dough hook; integrated bowl drain; carbon steel frame, enamel coating; stainless steel legs
B. Installation: Bolted to floor
C. Correctional Package: Tamper proof hardware; padlock hasps cover on/off switch
D. Electrical: 208V, 3 phase

68 HAND SINK
One
John Boos Model PBHS-W-1410-8OC or equal by Advance Tabco Model 7-PS-70 MOD or Krowne HS-20-LF *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Stainless steel construction; 7" high integral backsplash; chrome-plated P-trap, wall-mounting bracket; strainer-type waste, welded; stainless steel side supports; provide splash-mount hand sink faucet per Article 2.11B; faucet holes on 8" centers; add welded side splashes if required by code; correctional package tamper proof hardware for faucets and drain assemblies
B. Installation: Mount 34" above floor

69 SHEETER **(ADD ALTERNATE)**
One
Doyon Model LMA630 or equal by Gemini or Empire Bakery Equipment *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Floor model; 30 pound capacity; 20 speeds; stainless steel rollers and catch pans; adjustable roller gap; 1 HP; stainless steel construction; fold up belts; removable arms; emergency stop; thermal overload protection; polyurethane belts and (2) rolling pins; low profile casters
B. Correctional Package: Maximum security; tamper proof hardware
C. Electrical: 120V, 1 phase; cord and plug

70 STAINLESS STEEL WALL CAP
One
A. Fabricate; construct per Plan, Part 2-Products, Elevation and Standard Detail
"Substitutions": As approved by Architect prior to bid".
B. Features: Locate per Plan; 14 gauge stainless steel construction, close at exposed ends; width and length per Plan; crimp edge to wall; seal vertical edge to wall with adhesive sealant; match masonry unit radius if required; correctional package tamper proof screws

71 DIGITAL BENCH SCALE **(ADD ALTERNATE)**
Two
OHAUS Penn Model ES100L or equal by Kilotech or Industrial Scale Inc. *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Low profile; up to 220 pound capacity bench scale; 20-1/2" x 15-7/10" stainless steel platform; LCD digital display; (2) button operation; 3-wat mounting brackets (scale base, scale platform, any vertical surface); overload/underload indicator; AC adapter; (6) AA batteries, not included; painted steel frame; correctional package tamper proof hardware
B. Electrical: 120V, 1 phase; cord and plug

72 STAINLESS STEEL CORNER GUARD
Four
Fabricate; construct per Plan, Part 2-Products and Standard Detail; modify guard to be rounded at corner; correctional package including tamper proof hardware
"Substitutions": As approved by Architect prior to bid".

73 OVEN RACK, DOUBLE **(ADD ALTERNATE)**
Two
LBC Model LRR-2D-26-15 or equal by Baxter or Gemini *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Heavy-duty 18 gauge stainless steel rack construction; double side-load rack for double oven; capacity for (30) 18" x 26" pans on 4" spacing; four 4" diameter swivel casters; sized to fit into Proofer, Item #74 and Rack Ovens specified in this project; fully welded; requires factory assembly
B. Correctional Package: Welded fasteners; tamper proof hardware

74 ROLL-IN PROOFER, 2 DOUBLE RACKS **(ADD ALTERNATE)**
One
LBC Model LRP2S-50C or equal by Baxter or Gemini *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Two door unit; (2) double side load rack capacity proofer; stainless steel exterior and interior; without floor; FSEC to provide stainless steel coved base on interior and exterior; electric operation; digital temperature, humidity and time controls; LED display; interior bumpers; interior light, aluminized steel top; tubular heaters; control mounted on door(5) unique timers; quick disconnect water connection per Article 2.11B; water provided by building RO system, verify that it meets equipment requirements; provide stainless steel trim at opening in ceiling around proofer; upper side trim as required
B. Correctional Package (155-666): Tamper proof hardware; lockable control cover with clear acrylic window; locking loading doors
C. Electrical: 208V, 3 phase

75 FLOOR TROUGH
Two
IMC Teddy Model SEC-FT with SG-ADA grating or equal by Gates *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: All components fully welded; stainless steel floor trough, with continuously welded stainless steel seepage flange and weep holes to capture overflow; size and position per Plan; security package to include anchor straps, locking device welded on trough for grating; provide optional stainless steel basket beehive strainer (BBS); built in pitch towards waste; SG ADA grating, with 7/16" clearance between each bar; 304 stainless steel grating construction with 3/16" x 1" high bars and 1/2" stabilizer rods welded at each joint; provide shop drawing
B. Installation: Coordinate location of waste outlets with Mechanical; furnish trough assembly to Mechanical for installation; trough must be flush with finished floor; proper location of the trough is the responsibility of the FSEC

76 OPEN NUMBER

77 BAKERY WORKCOUNTER W/RICHLITE TOP **(ADD ALTERNATE)**
Two
Fabricate; construct per Plan, Part 2-Products, Elevation and Standard Details; correctional package tamper proof hardware
"Substitutions": As approved by Architect prior to bid".

78 DIVIDER ROUNDER **(ADD ALTERNATE)**
One
Dutchess Model JN or equal by Oliver Model 625 PLUS or Gemini Model GBE-DR Flex *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Rolled stainless steel frame; stainless steel cutting knives; 36 part divider head assembly; option to interchange with 18, 9 or 6 part divider head assemblies; two 36-part dough pallets; semi-automatic operation; 3/4 HP motor; removable/cleanable mechanism; cutter assembly removable without tools
B. Correctional Package: Tamper resistant handles and knobs; tamper proof hardware; padlock hasps cover on/off switch and other controls
C. Electrical: 208V, 3 phase

79 BREAD SLICER **(ADD ALTERNATE)**
One
Oliver Model 797-N or equal by Empire Bakery Equipment Model DURO or Doyon Baking Equipment Model CPF Series *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Floor model bread slicer; stainless steel contact components, food-safe materials throughout; one set of replacement blades; replaceable slicing blades; 1/2 HP; 32" infeed chute with ProGuard and single loaf pusher; 16" wide infeed chute; loaves 16" long, 2-1/4" to 5" high; Owner to choose thickness (pick one) 3/8", 7/16" 1/2", 1/4", 5/16", 9/16", 5/8", 3/4", 7/8", 1" or 1 1/4" slices; heavy duty casters with brakes
B. Correctional Package: Tamper resistant handles and knobs; tamper proof hardware; padlock hasps cover on/off switch and other controls
C. Electrical: 120V, 1 phase; cord and plug

80 OPEN NUMBER

81 SHEET PAN DOLLY **(ADD ALTERNATE)**
Two
Fabricate per Standard Detail SD-70 *R103
"Substitutions": As approved by Architect prior to bid".
Features: Stainless steel all welded construction; bottom shelf with capacity for (77) 18" x 26" sheet pans; four 5" diameter polyurethane swivel casters; correctional package tamper proof hardware

82 MOBILE EQUIPMENT STAND **(ADD ALTERNATE)**
One
Piper Products Model 331-3424 or equal by IMC/Teddy Model SMTS-3030 or Custom Fabrication *R103
"Substitutions": As approved by Architect prior to bid".
Features: Stainless steel construction; stainless steel slides to accommodate 18" x 26" sheet pans, welded to frame; 4" diameter polyurethane swivel casters, all with brakes; must accommodate Item #83; correctional package tamper proof hardware

83 BUN SLICER **(ADD ALTERNATE)**
One
Oliver Model 723-N or equal by DoughXpress DXSM-270 or Dutchess Bakers Model 270 *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Bagel and bun slicer; stainless steel chute, blade and all other contact parts; white powder coat finish; 1/3 HP motor; 4-7/8" maximum product width; up to 3" bun height; separate on/off buttons; blade safety guard, automatic power-down feature when removed; slice height feature; soft touch door for gentle discharge of product; cut variety of product; correctional package tamper proof hardware
B. Electrical: 120V, 1 phase; cord and plug

84 OVEN RACK, DOUBLE
Six
Existing; Owner to relocate to position shown on Plan

85 ROLL-IN BLAST CHILLER
One
Irinox Model MF 130.2 or equal by American Panel HURRiCHiLL *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Stainless steel construction; self-contained, air-cooled, remote condensing unit (UC 130 RU) with anti-vibration feet; 2-1/4" thick insulated, sunken floor; manual defrost; manual (timed) or automatic (probe) modes; full width door, low-temperature resistant magnetic gasket, hinged per Plan; interior door magnetically stores core probe; luminous display; 7" touch screen interface; end of cycle hold mode; capacity, (1) single universal angle roll-in rack, (24) 12"x20"x2-1/2" steam table pans or (12) 18"x26" full size sheet pans; (4) standard cycles; electronically controlled fans, stop when door is open; shock freezing temperature, -40 degrees F; 290 pound product capacity; blast chilling up to 90 minute cycle, shock freezing up to 240 minute cycle; sanitation system; front drain location; wireless data transfer; additional (2) food probes
B. Installation: Authorized factory installer; verify position of remote refrigeration unit to not exceed Manufacturer's recommendations
C. Correctional Package: Flexible probe; security fasteners; top cover; hinged stainless steel cover over control panel with locking hasp
D. Electrical: 208V, 3 phase

86 OPEN NUMBER

87 RACK OVEN, 2-SEC.
Two
Existing; relocate to position shown on Plan; FSEC to verify utilities and include utility requirements on rough-in drawings

88 OPEN NUMBER

89 FIRE PROTECTION SYSTEM
One
Ansul R-102 System or equal by Pyro-Chem or Range Guard *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Wet chemical fire protection system per Article 2.09 to protect Rack Oven, 2-Sec., Item #87, left in Plan; automatic electronic activated gas shut-off valve with manual reset; remote manual pull station; coordinate shape of empty J-box in wall (with empty conduit) by Electrical for remote pull by FSEC, and coordinate location with local fire authorities and Electrical Trades; all conduit to be inside wall; tanks and nozzles per UL 300; stainless steel cabinet; provide wet

chemical tanks properly sized to fit within 30" high stainless steel cabinet; correctional package tamper proof hardware; STI Stopper II

B. Testing: Provide system pre-test by factory authorized personnel to ensure proper operation prior to final test by Fire Marshal

C. Electrical: 120V, 1 phase

90 FIRE PROTECTION SYSTEM

One

Ansul R-102 System or equal by Pyro-Chem or Range Guard *R103

"Substitutions": As approved by Architect prior to bid".

A. Features: Wet chemical fire protection system per Article 2.09 to protect Rack Oven, 2-Sec., Item #87, right in Plan; automatic electronic activated gas shut-off valve with manual reset; remote manual pull station; coordinate shape of empty J-box in wall (with empty conduit) by Electrical for remote pull by FSEC, and coordinate location with local fire authorities and Electrical Trades; all conduit to be inside wall; tanks and nozzles per UL 300; stainless steel cabinet; provide wet chemical tanks properly sized to fit within 30" high stainless steel cabinet; correctional package tamper proof hardware; STI Stopper II

B. Testing: Provide system pre-test by factory authorized personnel to ensure proper operation prior to final test by Fire Marshal

C. Electrical: 120V, 1 phase

91 ICE MAKER

One

Manitowoc Model IYT-0300A or equal by Hoshizaki or Scotsman *R103

"Substitutions": As approved by Architect prior to bid".

A. Features: Stainless steel maker; up to 310 pounds per 24 hours ice production capacity; air cooled condensing unit; half dice cubes; luminice growth inhibitor; removable/cleanable air filter; correctional package tamper proof hardware; water provided by building RO system, verify that it meets equipment requirements

B. Electrical: 208V, 1 Phase

92 ICE BIN

One

Manitowoc Model D-400 or equal by Hoshizaki or Scotsman *R103

"Substitutions": As approved by Architect prior to bid".

Features: Stay-open door design; internal scoop holder; DuraTech™ stainless exterior; 365 pound storage capacity; 6" adjustable stainless steel legs; correctional package tamper proof hardware

93 FLOOR TROUGH

One

IMC Teddy Model SEC-FT with SG-ADA grating or equal by Gates *R103

"Substitutions": As approved by Architect prior to bid".

A. Features: All components fully welded; stainless steel floor trough, with continuously welded stainless steel seepage flange and weep holes to capture overflow; size and position per Plan; security package to include anchor straps, locking device welded on trough for grating; provide optional stainless steel basket beehive strainer (BBS); built in pitch towards waste; SG ADA grating, with 7/16" clearance between each bar; 304 stainless steel grating construction with 3/16" x 1" high bars and 1/2" stabilizer rods welded at each joint; provide shop drawing

B. Installation: Coordinate location of waste outlets with Mechanical; furnish trough assembly to Mechanical for installation; trough must be flush with finished floor; proper location of the trough is the responsibility of the FSEC

94-99 OPEN NUMBERS

100 HAND SINK
Seven
John Boos Model PBHS-W-1410-8OC or equal by Advance Tabco Model 7-PS-70 MOD or Krowne HS-20-LF *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Stainless steel construction; 7" high integral backsplash; chrome-plated P-trap, wall-mounting bracket; strainer-type waste, welded; stainless steel side supports; provide splash-mount hand sink faucet per Article 2.11B; faucet holes on 8" centers; add welded side splashes if required by code;
B. Correctional Package: Tamper proof hardware (to include faucet and drain assembly)
C. Installation: Mount 34" above floor

101A PAN STORAGE SHELVING
Five
New Age H. D. Shelving or equal by IMC Teddy Series SSS-L or Lakeside Prisonbilt Series PBWS *R103
"Substitutions": As approved by Architect prior to bid".
Features: Length and width shown on Plan; fully welded aluminum construction; four shelves per unit; 1500 lbs shelf capacity; 72" high posts; 6" platform casters, all with brakes (M6); correctional package tamper proof screws

101B PAN STORAGE SHELVING
Six
Existing; Owner to relocate to position shown on Plan

102 MOBILE LUG RACK
Three
New Age Model 1481 equal by PVI Fabricates Model WE70195W-PB or Choice Equipment *R103
"Substitutions": As approved by Architect prior to bid".
Features: Aluminum construction; 8 pan capacity on 7-1/2" centers; 70" high; pan stop; perimeter bumper; **unit to hold Cambro lugs, 18" x 26" x 6" deep; four 5" diameter polyurethane platform swivel casters; correctional package tamper proof hardware

103 UTILITY CART
One
Existing; Owner to relocate to position shown on Plan

104 WORKCOUNTER W/SINKS
One
Fabricate; construct per Plan, Part 2-Products, Elevation and Standard Details; correctional package tamper proof hardware for faucets and drain assemblies
"Substitutions": As approved by Architect prior to bid".

105 MOBILE TRASH BIN
Eight
Existing; Owner to relocate to position shown on Plan

106 OPEN NUMBER

107 SPRAY RINSE
One
Component Hardware PowerPulse Model KLP53-11L4-BR or equal by T&S Brass Model B-0133-CR or Chicago Faucet Model 510-GTFWSLXKCAB *R103
"Substitutions": As approved by Architect prior to bid".

Features: Flexible stainless steel hose with strain relief; ceramic cartridge; chrome-plated spring; insulated hose grip; wall mounting bracket; correctional package tamper proof hardware

108 WALL SHELF
One
Fabricate, construct per Plan, Part 2-Products, Elevation and Standard Detail; correctional package tamper proof hardware
"Substitutions": As approved by Architect prior to bid".

109 FOOD PROCESSOR
One
Existing; Owner to relocate to position shown on Plan; FSEC to verify utilities and include utility requirements on rough-in drawings

110 OPEN NUMBER

111 STAINLESS STEEL CORNER GUARD
Twenty-one
Fabricate; construct per Plan, Part 2-Products and Standard Detail; modify guard to be rounded at corner; correctional package including tamper proof hardware
"Substitutions": As approved by Architect prior to bid".

112 REACH-IN REFRIGERATOR, 2-SEC.
One
Existing; relocate to position shown on Plan; FSEC to verify utilities and include utility requirements on rough-in drawings

113 MOBILE EQUIPMENT STAND
One
Piper Products Model 331-3424 or equal by IMC/Teddy Model SMTS-3030 or Custom Fabrication *R103
"Substitutions": As approved by Architect prior to bid".
Features: Stainless steel construction; stainless steel slides to accommodate 18" x 26" sheet pans, welded to frame; 4" diameter polyurethane swivel casters, all with brakes; must accommodate Item #114; correctional package tamper proof hardware

114 SLICER
One
Existing; Owner to relocate to position shown on Plan; FSEC to verify utilities and include utility requirements on rough-in drawings

115 DOUBLE-WIDE WORKTABLE
Two
Fabricate; construct per Plan, Part 2-Products, Elevation and Standard Details; correctional package tamper proof hardware
"Substitutions": As approved by Architect prior to bid".

116 HORIZONTAL CUTTER/MIXER **(ADD ALTERNATE)**
One
Hobart Model HCM450C or equal by Robot Coupe *R103
"Substitutions": As approved by Architect prior to bid".

A. Features: 45 quart cutter/mixer; magnetically operated start/stop push button controls; 5 minute timer, hold and jog settings; stainless steel bowl with a built-in pouring lip; 90 degrees bowl tilt mechanism; removable stainless steel mixing baffle; clear hinged cover with safety interlock; centrifugal brake mechanism;

cut/mix attachment; strainer basket; bread/mix attachment; two base-mounted casters

B. Correctional Package: Maximum security; tamper proof handles and knobs; tamper proof hardware; padlock hasps cover on/off switch and other controls.

C. Electrical: 208V, 3 phase; cord and plug

117 FLOOR TROUGH

One

IMC Teddy Model SEC-FT with SG-ADA grating or equal by Gates *R103

"Substitutions": As approved by Architect prior to bid".

A. Features: All components fully welded; stainless steel floor trough, with continuously welded stainless steel seepage flange and weep holes to capture overflow; size and position per Plan; security package to include anchor straps, locking device welded on trough for grating; provide optional stainless steel basket beehive strainer (BBS); built in pitch towards waste; SG ADA grating, with 7/16" clearance between each bar; 304 stainless steel grating construction with 3/16" x 1" high bars and 1/2" stabilizer rods welded at each joint; provide shop drawing

B. Installation: Coordinate location of waste outlets with Mechanical; furnish trough assembly to Mechanical for installation; trough must be flush with finished floor; proper location of the trough is the responsibility of the FSEC

118 HOSE STATION

One

T&S Brass Model B-0105 or equal by Component Hardware or Chicago Faucets *R103

"Substitutions": As approved by Architect prior to bid".

Features: Wall mounted hot and cold water supply; 30" flexible 14 gauge stainless steel hose with polyurethane inner hose; code approved vacuum breaker; B-107 spray valve; wall hook; correctional package tamper proof hardware for faucets

119 HOSE STATION SECURITY CABINET

One

Fabricate; construct per PD-1, to accommodate hose station specified, Item #118, Part 2 Products and Standard Details; stainless steel construction; heavy duty stainless steel expanded mesh front; correctional package tamper proof hardware; provide shop drawing

"Substitutions": As approved by Architect prior to bid".

120-127 OPEN NUMBERS

128 CHEMICAL STORAGE SHELVING

Five

New Age H. D. Shelving or equal by IMC Teddy Series SSS-L or Lakeside Prisonbilt Series PBWS *R103

"Substitutions": As approved by Architect prior to bid".

Features: Length and width shown on Plan; fully welded aluminum construction; four shelves per unit; 1500 lbs shelf capacity; 72" high posts; 6" platform casters, all with brakes (M6); correctional package tamper proof screws

129 MOBILE WORKTABLE

One

Advance Tabco Model SS-305 or equal by Eagle Group or Custom Fabrication *R103

"Substitutions": As approved by Architect prior to bid".

Features: Length and width per Plan; 36" high; 14 gauge stainless steel top and understructure; stainless steel welded undershelf; stainless steel legs and underbracing; rolled rim edge; paint on sound deadening under top; four 5" diameter swivel casters, two with brakes; correctional package tamper proof hardware

130 OPEN NUMBER

131 CHEMICAL STORAGE SHELVING
Two
Existing; Owner to relocate to position shown on Plan

132 STACKED WASHER/GAS DRYER
One
Speed Queen Commercial Washer/Gas Dryer Model LTGE5ASP115TW01 *R103
"Substitutions": As approved by Architect prior to bid".
A. Washer Features: "Big door opening", see thru; front mount supply dispenser automatically adds detergent, bleach and softener; stainless steel washtub; high speed extract; rugged steel construction, all drive components; 3/4 HP drive motor; free standing design; four wash cycles with four temperature combinations; built in anti-vibration system; soft mount design; energy star rated
B. Dryer Features: Gas dryer; wide door opening; galvanized steel cylinder, gentle tumble action; quiet blower system; large capacity lint filter; cushioned drum suspension; variable timer control with three temperature selections
C. Electrical: (2) 120V, 1 phase; cord and plug (Washer & Dryer)

133 OPEN NUMBER

134 STAINLESS STEEL WALL CAP
Three
A. Fabricate; construct per Plan, Part 2-Products, Elevation and Standard Detail
"Substitutions": As approved by Architect prior to bid".
B. Features: Locate per plan; 14 gauge stainless steel construction, close at exposed ends; width and length per plan; crimp edge to wall; seal vertical edge to wall with adhesive sealant; match masonry unit radius if required

135-139 OPEN NUMBERS

140 MOBILE WORKTABLE
Two
Advance Tabco Model SS-306 or equal by Eagle Group or Custom Fabrication *R103
"Substitutions": As approved by Architect prior to bid".
Features: Length and width per Plan; 36" high; 14 gauge stainless steel top and understructure; stainless steel welded undershelf; stainless steel legs and underbracing; rolled rim edge; paint on sound deadening under top; four 5" diameter swivel casters, all with brakes; correctional package tamper proof hardware

141 WORKCOUNTER
Two
Existing; relocate to position shown on Plan; FSEC to verify utilities and include utility requirements on rough-in drawings; modify by adding (6) heavy duty swivel casters all with brakes to each unit; correctional package tamper proof hardware
"Substitutions": As approved by Architect prior to bid".

142 MOBILE WARMING CABINET
Five
CresCor Model H-137-UA-12DZ or equal by FWE UHST Series, Carter-Hoffman HL Series or Metro Industries C5 T-Series *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Aluminum construction; insulated holding cabinet; 1500 watt heating system; temperature up to 200 degrees F; solid state electronic control, LED digital display; 12 sets of universal angle slides, on 4-1/2" center; insulated dutch doors with magnetic latch; door swing per Plan; key locking door latches;

recessed push/pull handle; top mount controls; perimeter bumper; four 5" heavy-duty polyurethane swivel casters, two with brakes

B. Correctional Package: Locking stainless steel and lexan security panel; universal angles welded and riveted; tamper proof fasteners

C. Electrical: 120V, 1 phase; cord and plug

143 MOBILE RACK
Sixteen
Existing; Owner to relocate to position shown on Plan

144 80 QUART MIXER
One
Existing; relocate to position shown on Plan; FSEC to verify utilities and include utility requirements on rough-in drawings

145 WORKCOUNTER W/SINKS
One

A. Fabricate; construct per Plan, Part 2-Products, Elevation and Standard Details; correctional package tamper proof hardware for faucets and drain assemblies "Substitutions": As approved by Architect prior to bid".

B. Electrical: (3) 120V, 1 phase; 208V, 1 phase

146 WORKCOUNTER W/SINKS
One

A. Fabricate; construct per Plan, Part 2-Products, Elevation and Standard Details; correctional package tamper proof hardware for faucets and drain assemblies "Substitutions": As approved by Architect prior to bid".

B. Electrical: (4) 120V, 1 phase

147 SHEET PAN DOLLY
Two
Fabricate per Standard Detail SD-70 *R103
"Substitutions": As approved by Architect prior to bid".
Features: Stainless steel all welded construction; bottom shelf with capacity for (77) 18" x 26" sheet pans; four 5" diameter polyurethane swivel casters; correctional package tamper proof hardware

148 EXHAUST HOOD (TYPE I)
One
Gaylord Model ELX-GBDAV-A-MP-AV-72 or equal by Halton or Streivor *R103
"Substitutions": As approved by Architect prior to bid".

A. Features: Grease extractor type hood; non-water wash; 24" high canopy; fully insulated hood to meet UL710 zero clearance requirements; fire damper; one extractor removal tool per project; LED lights; equipped per Article 2.08; heat sensors installed at each hood duct collar to automatically activate the exhaust fan whenever cooking operations occur; factory pre-piped for R-102, Ansul System; provide shop drawing

B. Size: Per Plan

C. Exhaust Requirements: The project was designed based on the exhaust air volumes listed below:

D. Exhaust: Four duct collars, each measuring 15" x 12", two duct collars each measuring 12" x 12" for a total of 9952 CFM at 1.17" static pressure

E. Correctional Package: Locked electronic controls; no removable parts; bottom of service wall enclosed; wire guard over light lenses; covered and locked emergency shut off switches, service breakers and any other controls; lock in filters; tamper proof hardware

F. Hood must comply with code authority requirements, properly ventilate the cooking equipment beneath it and be compatible with the building ventilation system; see mechanical engineer's drawings for further requirements
G. Fire Protection: Refer to Item #151
Demand Control Ventilation: Refer to Item #153
H. Installation: Mount bottom edge of hood per Elevation
I. Electrical: 120V, 1 phase

149 STAINLESS STEEL WALL PANEL
One
A. Fabricate; construct per Plan, Part 2-Products, Elevation and Standard Detail "Substitutions": As approved by Architect prior to bid".
B. Features: 18 gauge continuous stainless steel panel, Rigidized Metal, pattern Sand-Tex or equal by Rimex, pattern Metal Sandstar; stainless steel sheet to extend from 6" AFF, coordinate with height of floor covering, to bottom edge of hood; conceal fasten to wall and seal perimeter; neatly finish utility openings with escutcheon covers; maximize size of sheets used

150 UTILITY DISTRIBUTION CENTER
One
Gaylord Model DH-WM-E3-HC-G-29.08 (Refer to Drawing No. 22-1632) or equal by Halton or Streivor *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Wall mounted Utility Distribution System (UDS); stainless steel 16 gauge, type 304 construction; main riser; raceway DH; pedestal for raceway; C-150 MTD in riser; Ansul P.I.D. in riser; security access package; hardwire; C.W. and Hot water manifold; treated C.W. main connection in riser; H.W./C.W./Treated water in raceway; primary gas manifold up to 3"; primary gas manifold in raceway; gas valve up to 3"; gas drop with hose up to 1"; water hoses and drops up to 3/4"; main electrical supply to riser with water tight connections by Electrical Contractor; coiled cable restraint device; mounting bracket for hose reel; flush mounted hinged access door; bumper strip; include keyed compression latch locks on doors; adjustable tube legs; equipment status lights, 15 hole plate; emergency kill switch; main system disconnect; SQUARE-D breaker stainless steel panel and DEAD FRT behind hinged access door; GFCI duplex outlet; stainless steel filler panel at back of Exhaust Hood to wall; limited and security package; correctional package tamper proof screws
B. Provide shop drawing to Foodservice Consultant for review
C. Electrical: 120/208V, 3 phase

151 FIRE PROTECTION SYSTEM
One
Ansul R-102 System or equal by Pyro-Chem or Range Guard *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Wet chemical fire protection system per Article 2.09 to protect exhaust hood, Item #148 and the equipment below; automatic electronic activated gas shut-off valve with manual reset; remote manual pull station; coordinate shape of empty J-box in wall (with empty conduit) by Electrical for remote pull by FSEC, and coordinate location with local fire authorities and Electrical Trades; all conduit to be inside wall; tanks and nozzles per UL 300; stainless steel cabinet; provide wet chemical tanks properly sized to fit within 30" high stainless steel cabinet; correctional package tamper proof hardware; STI Stopper II
B. Testing: Provide system pre-test by factory authorized personnel to ensure proper operation prior to final test by Fire Marshal
C. Electrical: 120V, 1 phase

152 OPEN NUMBER

153 DEMAND CONTROL VENTILATION SYSTEM
One
Gaylord Model DCV-AV-LA-E1M1-HS3-DC-ST-TR or equal by Halton or Streivor *R103
"Substitutions": As approved by Architect prior to bid".

A. Features: Hood components installed at hood manufacturer; control cabinet located per Plan; space temperature sensors; infrared sensors; plug-n-play cables; remote internet-based monitoring and control; override switch located in exhaust hood; VFD's by others; correctional package tamper proof hardware
B. System: One individual system to service the hood listed below:
C. System A to service Exhaust Hood, Item #148
D. Installation: Factory install and prewire components in hoods; interconnections are by Applicable Contractor per shop drawings
E. Monitoring: Include (1) year monitoring and control service, internet connection as required, by Exhaust Hood Manufacturer or thru third party provided by the Exhaust Hood Manufacturer
F. Testing: Assist Mechanical contractor with start-up and testing of system; field start-up by Hood Manufacturer authorized service agency; prepare report stating results of test and submit to Architect/Engineer
G. Electrical: (2) 120V, 1 phase

154 60 GALLON KETTLE
Two
Cleveland Model KGL-60-T or equal by Groen or Legion Industries *R103
"Substitutions": As approved by Architect prior to bid".

A. Features: Self-contained kettle with 60 gallon capacity; manual tilt mechanism with locking worm gear; 50 PSI safety valve; 316 stainless steel kettle liner; condensate drain valve with insulated handle; pouring lip with strainer; kettle gallon markings; kettle accessory kit; natural gas operation; gas pressure regulator; 4' security gas quick disconnect hose with restraining chain per Article 2.11B; hot and cold water fill faucet with swing spout and mixing valve; faucet bracket; spring assisted, hinged rotatable domed stainless steel cover; 2" tangent draw-off valve with drain strainer
B. Correctional Package: Maximum security; tamper proof spring hinge assembly; tamper resistant cover with welded bracket; heavy duty reinforced rim bar; non removable nameplate; tamper resistant draw off valve protection, stainless steel bar welded to kettles; tamper proof spanner drilled head screws; three spanner drilled head screw drivers
C. Tethers: To be added to kettle for use with paddles to be used for this unit, verify location with Owner prior to placing on kettle
D. Electrical: 120V, 1 phase; cord and plug

155 80 GALLON KETTLE
Two
Cleveland Model KGL-80-T or equal by Groen or Legion Industries *R103
"Substitutions": As approved by Architect prior to bid".

A. Features: Self-contained kettle with 80 gallon capacity; manual tilt mechanism with locking worm gear; 50 PSI safety valve; 316 stainless steel kettle liner; condensate drain valve with insulated handle; pouring lip with strainer; kettle gallon markings; kettle accessory kit; natural gas operation; gas pressure regulator; 4' security gas quick disconnect hose with restraining chain per Article 2.11B; hot and cold water fill faucet with swing spout and mixing valve; faucet bracket; spring assisted, hinged rotatable domed stainless steel cover; 2" tangent draw-off valve with drain strainer
B. Correctional Package: Maximum security; tamper proof spring hinge assembly; tamper resistant cover with welded bracket; heavy duty reinforced rim bar; non removable nameplate; tamper resistant draw off valve protection, stainless steel bar welded to kettles; tamper proof spanner drilled head screws; three spanner drilled head screw drivers

C. Tethers: To be added to kettle for use with paddles to be used for this unit, verify location with Owner prior to placing on kettle
D. Electrical: 120V, 1 phase; cord and plug

156 FLOOR TROUGH
One
IMC Teddy Model SEC-FT with SG-ADA grating or equal by Gates *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: All components fully welded; stainless steel floor trough, with continuously welded stainless steel seepage flange and weep holes to capture overflow; size and position per Plan; security package to include anchor straps, locking device welded on trough for grating; provide optional stainless steel basket beehive strainer (BBS); built in pitch towards waste; SG ADA grating, with 7/16" clearance between each bar; 304 stainless steel grating construction with 3/16" x 1" high bars and 1/2" stabilizer rods welded at each joint; provide shop drawing
B. Installation: Coordinate location of waste outlets with Mechanical; furnish trough assembly to Mechanical for installation; trough must be flush with finished floor; proper location of the trough is the responsibility of the FSEC

157 OPEN NUMBER

158 STEAMER, 2-SEC.
Two
Existing; relocate to position shown on Plan; FSEC to verify utilities and include utility requirements on rough-in drawings; provide new 4' security gas quick disconnect hose with restraining chain per Article 2.11B; water provided by building RO system, verify that it meets equipment requirement

159 OPEN NUMBER

160 STEAMER, 2-SEC.
One
Existing; relocate to position shown on Plan; FSEC to verify utilities and include utility requirements on rough-in drawings; provide new 4' security gas quick disconnect hose with restraining chain per Article 2.11B; water provided by building RO system, verify that it meets equipment requirement

161 STEAMER, 2-SEC.
One
Cleveland Model 24-CGA-10 or equal by Groen or Vulcan *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Two-compartment steamer; stainless steel cabinet frame, doors, and cavity; door hinging per Plan; 10 pan capacity; natural gas-fired steam generator; 4' security gas quick disconnect hose with restraining chain per Article 2.11B; 125 MBTU; main power on/off switch; manual controls; electronic spark ignition; thermal temperature resettable switch; automatic fill on startup; automatic generator blowdown; drain cleaning cycle; automatic probe for water level control, with high velocity rinse cycle; condensate drip trough; compartment door steam shut-off switch; two 60 minute mechanical timers; steam stand-by mode; manual bypass operation mode; cold water condenser design; one standard treated and tap water connection; 6" high stainless steel legs with adjustable flanged feet; drain cooling kit; water provided by building RO system, verify that it meets equipment requirements
B. Correctional Package CP-SCG includes: (CP-SC10), tamper proof exterior with tamper proof spanner drilled head screws; (CP-SCRD), set of screw drivers for tamper proof screws; (CP-PR), non-removable tamper proof pan racks for interior cooking compartment; (CP-PORT), tamper proof hasp-type hinged cover for

descaling port, lock by Owner; (CP-COVER1), tamper proof hasp-type hinged cover for controls and power switch, lock by Owner

C. Electrical: 120V, 1 phase

162 HOSE REEL

One

T & S Brass Model B-7133-U03WS5 *R103

"Substitutions": As approved by Architect prior to bid".

A. Features: Retractable hose reel with open reel; stainless steel rear trigger water gun MV-2516-34 with adapter 019653-40, rubber cover and swivel; 35' of 1/2" rubber hose; T&S Model B-2339-LR Reel Control Cabinet, with control valve, dual check valves, thermometer and hammer arrestor; shut-off valve; 8.09 GPM; code approved backflow preventer by Mechanical Trades; volume control and coupling; stainless steel wall/ceiling-mount swivel bracket; spray valve B-0108-H used w/o gun and adapter

B. Correctional Package: Maximum security; tamper proof hardware

C. Installation: Furnish components to Mechanical for installation, coordinate plumbing requirements so that all piping is concealed in wall; mounting height per detail

163 RACK OVEN, 2-SEC.

Two

LBC Model LRO-2G6-N-70 or equal by Baxter or Gemini *R103

"Substitutions": As approved by Architect prior to bid".

A. Features: Double rack oven; capacity for two single racks or one double oven rack; natural gas operation; stainless steel exterior and interior; 12 gauge (0.105" thick) steel floor, anchored to the subfloor with (8) anchor bolts; counterflow heat exchanger; self-contained, waterfall type steam generation system; 0" combustible wall clearance at sides and back; insulated door with full-length window; heavy-duty rack lift with gear-driven rotation system; self-adjusting rotor clutch; programmable digital control; manual backup control; integral Type I exhaust hood with grease filters; automatic operation; Fire Protection System, Items #169 and #170; ventilator fan provided by Electrical Contractor; interior lighting; oven-powered connection point for automatic fan operation with interconnection from fan to oven provided by Mechanical Contractor; FSEC to provide stainless steel trim flange at opening in ceiling around oven and stainless steel enclosure panels from top of oven to ceiling; FSEC to provide stainless steel coved interior and exterior base; quick disconnect water connection per Article 2.11B; water provided by building RO system, verify that it meets equipment requirements; coordinate building entrance requirements and provide split oven if requirements cannot be met; factory authorized set-up required

B. Correctional Package (160-666): Maximum security; tamper proof hardware; lockable cover on control panel, pad locks are keyed alike; lockable loading door; emergency stop/alarm switch located inside baking chamber; metal cover over loading door window and baking chamber light

C. Installation: Provide complete installation and start-up by factory authorized installers

D. Electrical: 120/208V, 3 phase

164 OVEN RACK, DOUBLE

Two

LBC Model LRR-2D-26-15 or equal by Baxter or Gemini *R103

"Substitutions": As approved by Architect prior to bid".

A. Features: Heavy-duty 18 gauge stainless steel rack construction; double side-load rack for double oven; capacity for (30) 18" x 26" pans on 4" spacing; four 4" diameter swivel casters; sized to fit into Proofer, Item #74 and Rack Ovens, Item #163 specified in this project; fully welded; requires factory assembly

B. Correctional Package: Welded fasteners; tamper proof hardware

165 -167 OPEN NUMBERS

168 HOSE REEL SECURITY CABINET
Three
Fabricate; construct per PD-1, to accommodate hose reel specified, Items #162 and (2) #184, Part 2 Products and Standard Details; stainless steel construction; heavy duty stainless steel expanded mesh front; correctional package tamper proof hardware; provide shop drawing
"Substitutions": As approved by Architect prior to bid".

169 FIRE PROTECTION SYSTEM
One
Ansul R-102 System or equal by Pyro-Chem, or Range Guard *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Wet chemical fire protection system per Article 2.09 to protect (1) Item #163, Rack Oven, 2-Sec.; automatic electronic activated gas shut-off valve with manual reset; remote manual pull station; coordinate shape of empty J-box in wall (with empty conduit) by Electrical for remote pull by FSEC, and coordinate location with local fire authorities and Electrical Trades; all conduit to be inside wall; tanks and nozzles per UL 300; stainless steel cabinet; provide wet chemical tanks properly sized to fit within 30" high stainless steel cabinet; correctional package tamper proof hardware; STI Stopper II
B. Testing: Provide system pre-test by factory authorized personnel to ensure proper operation prior to final test by Fire Marshal
C. Electrical: 120V, 1 phase

170 FIRE PROTECTION SYSTEM
One
Ansul R-102 System or equal by Pyro-Chem, or Range Guard *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Wet chemical fire protection system per Article 2.09 to protect (1) Item #163, Rack Oven, 2-Sec.; automatic electronic activated gas shut-off valve with manual reset; remote manual pull station; coordinate shape of empty J-box in wall (with empty conduit) by Electrical for remote pull by FSEC, and coordinate location with local fire authorities and Electrical Trades; all conduit to be inside wall; tanks and nozzles per UL 300; stainless steel cabinet; provide wet chemical tanks properly sized to fit within 30" high stainless steel cabinet; correctional package tamper proof hardware; STI Stopper II
B. Testing: Provide system pre-test by factory authorized personnel to ensure proper operation prior to final test by Fire Marshal
C. Electrical: 120V, 1 phase

171 OPEN NUMBER

172 POT & PAN CART
Two
Lakeside Model 954 or equal by Piper Products or Choice Equipment Company *R103
"Substitutions": As approved by Architect prior to bid".
Features: Stainless steel construction with three shelves; shelf size 24" x 42"; 1000 pound capacity; bumpers on legs and handle; delete fixed casters; ground and polished joint welds; provide four 5" diameter swivel casters; NSF listed; correctional package tamper proof hardware

173 POT & PAN SINK
One
Fabricate; construct per Plan, Part 2-Products, Elevation and Standard Details; all chemical dispensing systems to be provided by Owner & Owner's Vendor, based on equipment Manufacturer specifications; correctional package tamper proof hardware for

faucets and drain assemblies
"Substitutions": As approved by Architect prior to bid".

174 DISPOSER
One
Salvajor Model 300-CA-18-WSP or equal by In-Sink-Erator *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Corrosion resistant aluminum alloy with smooth polished finish exterior; 3 HP motor; offset chute; ARSS control with start/stop buttons and forward/reverse switch; 18" cone assembly; vacuum breaker; angle flanges per Article 2.11B; line disconnect; time delay relay, solenoid valve, flow control valve; mounting bracket #980105; includes three support legs with bolt down flanges; correctional package tamper proof hardware
B. Electrical: 208V, 3 phase

175 SPRAY RINSE
One
Component Hardware PowerPulse Model KLP53-11L4-BR or equal by T&S Brass Model B-0133-CR or Chicago Faucet Model 510-GTFWSLXKCAB *R103
"Substitutions": As approved by Architect prior to bid".
Features: Flexible stainless steel hose with strain relief; ceramic cartridge; chrome-plated spring; insulated hose grip; wall mounting bracket; correctional package tamper proof hardware

176-180 OPEN NUMBERS

181 CART WASH STAINLESS STEEL WALL PANEL
One
A. Fabricate; construct per Plan, Part 2-Products, Elevation and Standard Detail
"Substitutions": As approved by Architect prior to bid".
B. Features: 18 gauge continuous stainless steel panel; stainless steel sheet to extend from 6" AFF, coordinate with height of floor covering, to ceiling; conceal fasten to wall and seal perimeter; maximize size of sheets used

182 HOSE STATION
One
Spray Master Technologies Model 300-5122 *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Wall-mounted pressure washer; 2.1 GPM; 2 HP motor; totally enclosed fan; ceramic plunger pump; SSR with integrated LED; dual chemical injection system; 30 foot stainless steel braided hose, manual rewind hose reel; SMT-6" Shorty Spray Gun; pressure gauge; full stainless steel cover & frame; chemical mounting bracket (300-1002); low water shut off protection; back flow preventor per local codes, includes anti-backflow/anti-siphon protection with 1" air gap via water level float tank; thermal limit switch; water filter assembly with replacement filter cartridge and oil; chemical assembly, manual; wall mount kit; correctional security package tamper proof hardware
B. Electrical: 120V, 1 phase; cord and plug

183 FLOOR TROUGH
One
IMC Teddy Model SEC-FT with SG-ADA grating or equal by Gates *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: All components fully welded; stainless steel floor trough, with continuously welded stainless steel seepage flange and weep holes to capture overflow; size and position per Plan; security package to include anchor straps, locking device welded on trough for grating; provide optional stainless steel basket beehive strainer (BBS); built in pitch towards waste; SG ADA grating, with

7/16" clearance between each bar; 304 stainless steel grating construction with 3/16" x 1" high bars and 1/2" stabilizer rods welded at each joint; provide shop drawing

B. Installation: Coordinate location of waste outlets with Mechanical; furnish trough assembly to Mechanical for installation; trough must be flush with finished floor; proper location of the trough is the responsibility of the FSEC

184 HOSE REEL

Two

T & S Brass Model B-7133-U03WS5 *R103

"Substitutions": As approved by Architect prior to bid".

A. Features: Retractable hose reel with open reel; stainless steel rear trigger water gun MV-2516-34 with adapter 019653-40, rubber cover and swivel; 35' of 1/2" rubber hose; T&S Model B-2339-LR Reel Control Cabinet, with control valve, dual check valves, thermometer and hammer arrestor; shut-off valve; 8.09 GPM; code approved backflow preventer by Mechanical Trades; volume control and coupling; stainless steel wall/ceiling-mount swivel bracket; spray valve B-0108-H used w/o gun and adapter

B. Correctional Package: Maximum security; tamper proof hardware

C. Installation: Furnish components to Mechanical for installation, coordinate plumbing requirements so that all piping is concealed in wall; mounting height per detail

185 EYE/FACE WASH STATION

Two

Guardian Equipment GBF1735DP *R103

"Substitutions": As approved by Architect prior to bid".

A. Features: Stainless steel recessed cabinet; swing down eye/face wash unit; two spray heads; built-in flow control; stainless steel drain pan; universal emergency eyewash sign; spray heads automatically activated when unit is pulled open; Model G6024.1L6 recessed thermostatic mixing valve; 2-year warranty; correctional security package tamper proof hardware

B. Installation: Install flush in wall with exterior panic bar at 48" maximum above finished floor for operation with spray heads at 34" above finished floor; coordinate wall opening requirements with Architectural Trade

186 SOILED DISHTABLE

One

Fabricate; construct per Plan, Part 2-Products, Elevation and Standard Details; tamper proof hardware for faucets and drain assemblies

"Substitutions": As approved by Architect prior to bid".

187 DISPOSER

Two

Salvajor Model 300-SA-6-WSP or equal by In-Sink-Erator *R103

"Substitutions": As approved by Architect prior to bid".

A. Features: Corrosion resistant aluminum alloy with smooth polished finish exterior; 3 HP motor; offset shut; ARSS control with start/stop buttons and forward/reverse switch; sink assembly with 6-1/2" sink collar; vacuum breaker; angle flanges per Article 2.11B; line disconnect; time delay relay, solenoid valve, flow control valve; mounting bracket #980105; includes three support legs with bolt down flanges; correctional package tamper proof hardware

B. Electrical: 208V, 3 phase

188 HOSE STATION SECURITY CABINET

One

Fabricate; construct per PD-1, to accommodate hose reel specified, Item #182; Part 2 Products and Standard Details; stainless steel construction; heavy duty stainless steel

expanded mesh front; correctional package tamper proof hardware; provide shop drawing
"Substitutions": As approved by Architect prior to bid".

189 FLIGHT-TYPE DISHMACHINE W/DRYER
One
Stero Model STPCW-ER 3 TANK (refer to Project #22-01001) or equal by Hobart or Meiko *R103
"Substitutions": As approved by Architect prior to bid".

A. Features: Flight type three-tank dishmachine; electric tank heat; 21' overall length; direction of operation per Plan; 32", power scrapper, 44", power wash and 44", power rinse sections; variable speed 31" wide conveyor belt; auto fill; Kit 55 (pressure reducing valve, shock arrestor and pressure gauge in final rinse); cold water Aqua Stat; door safety switches; top mounted control panel; auto shut-down; common plumbing connection, including drain; final rinse saver; (2) stainless steel vent cowls with manual adjustable locking dampers, (ducts to ceiling by others); welded stainless steel frame; stainless steel feet, legs and enclosure panels; mounted circuit breakers for each motor; electric booster heater, STPCWER3T-BST024, sized to provide 180 degree F rinse water; electric blower/dryer, DRYELE; 48" long drying hood with vent; 36" load section; 96" unload section; stainless steel peg belt, security package; front accessible pumps; insulated cabinet style doors; 9" vent hood; load end drain water tempering kit; remote start/stop controls on load and unload ends; safety stop at unload end; all chemical dispensing systems to be provided by Owner & Owner's Vendor, based on equipment Manufacturer specifications; provide shop drawing
B. Correctional Package: Maximum security package (SECMAX); security screw with tool and bit; lockable control box; locking doors; lockable control cover; mesh covered gauges; non-removable curtain rods; perforated stainless steel under grid
C. Installation: Provide factory supervision during dishmachine installation; coordinate testing and dishmachine demonstration with Owner's staff and detergent/chemical supplier; service agent to provide thorough check of utility connections/pressures prior to Operator usage; "detailing"(in-depth cleaning) of the machine prior to start-up
D. Electrical: 480V, 3 phase

190 EXHAUST DUCT RISER
One

A. Fabricate; construct per Plan, Part 2-Products and Elevation
"Substitutions": As approved by Architect prior to bid".
B. Features: 18 gauge stainless steel vapor-proof welded construction; extend riser to 6" above finished ceiling, include stainless steel trim flange at ceiling
C. Installation: Install on dishmachine per Manufacturer's instructions

191 SPRAY RINSE
Two
Component Hardware PowerPulse Model KLP53-11L4-BR or equal by T&S Brass Model B-0133-CR or Chicago Faucet Model 510-GTFWSLXKCAB *R103
"Substitutions": As approved by Architect prior to bid".
Features: Flexible stainless steel hose with strain relief; ceramic cartridge; chrome-plated spring; insulated hose grip; wall mounting bracket; correctional package tamper proof hardware

192 FLOOR TROUGH
One
IMC Teddy Model SEC-FT with SG-ADA grating or equal by Gates *R103
"Substitutions": As approved by Architect prior to bid".

A. Features: All components fully welded; stainless steel floor trough, with continuously welded stainless steel seepage flange and weep holes to capture overflow; size and position per Plan; security package to include anchor straps, locking device welded on trough for grating; provide optional stainless steel basket beehive strainer (BBS); built in pitch towards waste; SG ADA grating, with 7/16" clearance between each bar; 304 stainless steel grating construction with 3/16" x 1" high bars and 1/2" stabilizer rods welded at each joint; provide shop drawing
B. Installation: Coordinate location of waste outlets with Mechanical; furnish trough assembly to Mechanical for installation; trough must be flush with finished floor; proper location of the trough is the responsibility of the FSEC

193 DRYING RACK
Twelve
Existing; Owner to relocate to position shown on Plan

194 FLOOR TROUGH
One
IMC Teddy Model SEC-FT with SG-ADA grating or equal by Gates *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: All components fully welded; stainless steel floor trough, with continuously welded stainless steel seepage flange and weep holes to capture overflow; size and position per Plan; security package to include anchor straps, locking device welded on trough for grating; provide optional stainless steel basket beehive strainer (BBS); built in pitch towards waste; SG ADA grating, with 7/16" clearance between each bar; 304 stainless steel grating construction with 3/16" x 1" high bars and 1/2" stabilizer rods welded at each joint; provide shop drawing
B. Installation: Coordinate location of waste outlets with Mechanical; furnish trough assembly to Mechanical for installation; trough must be flush with finished floor; proper location of the trough is the responsibility of the FSEC

195 CONDENSATE HOOD
One
Gaylord Model VH2-I-57 or equal by Halton or Streivor *R103
"Substitutions": As approved by Architect prior to bid".
A. Features: Type II vapor hood; 18 gauge stainless steel, fully ground and polished; duct collar to extend 6" high above ceiling; full perimeter condensate gutter at edges of hood, slope to drain; equipped per Article 2.08
B. Size: Per Plan
C. Exhaust Requirements: The project was designed based on exhaust air volume listed below:
D. Exhaust: One duct collar measuring 20" x 12" at 2400 CFM at 0.250" static pressure
E. Correctional Package: Locked electronic controls; no removable parts; bottom of service wall enclosed; wire guard over light lenses; covered and locked emergency shut off switches, service breakers and any other controls; tamper proof hardware
F. Hood must comply with code authority requirements, properly ventilate the equipment beneath it and be compatible with the building ventilation system; see mechanical engineer's drawings for further requirements
G. Installation: Mount bottom edge at 7'-0" AFF

END OF SECTION

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SECTION 12 3600
COUNTERTOPS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Countertops for architectural cabinet work.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. ANSI A208.1 - American National Standard for Particleboard; 2022.

B. ANSI A208.2 - Medium Density Fiberboard (MDF) for Interior Applications; 2022.

C. AWI (QCP) - Quality Certification Program; Current Edition.

D. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

E. ISFA 2-01 - Classification and Standards for Solid Surfacing Material; 2013.

F. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

1.04 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.

D. Verification Samples: For each finish product specified, minimum size 4 inches square, representing actual product, color, and patterns.

E. Test Reports: Chemical resistance testing, showing compliance with specified requirements.

F. Maintenance Data: Manufacturer's instructions and recommendations for maintenance and repair of countertop surfaces.

1.05 QUALITY ASSURANCE

A. 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.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.07 FIELD CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 COUNTERTOPS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS), unless noted otherwise.

B. Solid Surfacing Countertops: Solid surfacing sheet or plastic resin casting over continuous substrate.

1. Flat Sheet Thickness: 1/2 inch, minimum.
2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic resin, unfilled, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
   a. Manufacturers:
      1) Dupont; <>: www.corian.com.
      2) Formica Corporation; <>: www.formica.com.
      3) LG Hausys America, Inc; HI-MACS 12mm: www.lghausysusa.com/#sle.
      4) Wilsonart; <>: www.wilsonart.com.
      5) Substitutions: See Section 01 6000 - Product Requirements.
   b. Finish on Exposed Surfaces: Matte, gloss rating of 5 to 20.
   c. Color and Pattern: To be selected by Architect from manufacturer's full range of colors and price grades.
3. Other Components Thickness: 1/2 inch, minimum.
4. Exposed Edge Treatment: Built up to minimum 1-1/2 inch thick; edge profile as indicated on drawings.
5. Back and End Splashes: Same sheet material, integral, eased edge top; minimum 4 inches high.
6. Fabricate in accordance with AWI/AWMAC/WI (AWS), Section 11 - Countertops, Custom Grade.

2.02 ACCESSORY MATERIALS

A. Wood-Based Components:
   1. Wood fabricated from old growth timber is not permitted.

B. Particleboard for Supporting Substrate: ANSI A208.1 Grade 2-M-2, 45 pcf minimum density; minimum 1/2 inch thick; join lengths using metal splines.

C. Medium Density Fiberboard for Supporting Substrate: ANSI A208.2.

D. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.

E. Joint Sealant: Mildew-resistant silicone sealant, clear.

2.03 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. Solid Surfacing: Fabricate tops and wall panels up to 144 inches long in one piece; join pieces with adhesive sealant in accordance with manufacturer's recommendations and instructions.
   1. Integral sinks: Shop-mount securely to countertop with adhesives, using flush configuration, as per manufacturer's instructions, and as detailed on drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect/Engineer of unsatisfactory preparation before proceeding.

C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. 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.

3.04 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.

3.05 CLEANING

A. Clean countertops surfaces thoroughly.

3.06 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