SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

The following supplements modify, change, delete from or add to the "Instructions to Bidders," AIA Document A701 - 2018 Edition. Where any Article of the Instructions to Bidders is modified or by paragraph, subparagraph or clause thereof is modified or deleted by these Supplementary Instructions to Bidders, the unaltered provisions of that Article, paragraph, subparagraph or clause shall remain in effect.

Instructions to Bidders apply with equal force to the contractor, all subcontractors, work, extra work and the like that may be specified herein or performed in or about building or site under this Contract.

Article 2 Bidder's Representations

ADD THE FOLLOWING PARAGRAPHS:
2.1.7 A bidder, in submitting a bid, thereby represents that he/she is fully qualified, properly licensed, staffed and equipped to properly perform the work in accordance with all applicable laws and local ordinances having jurisdiction.

2.2 The Bidder's attention is directed to the fact that all applicable State laws, Municipal ordinances and the rules and regulations of all authorities having jurisdiction over the construction of the project shall apply to the Contractor throughout and they will be deemed to be included in the Contract the same as if written therein in full.

Article 3.1 Copies

*REPLACE PARAGRAPH **3.1.1** with the following*: Bidders may obtain complete sets of bidding documents as described in the Invitation for Bids.

DELETE PARAGRAPH **3.1.3**

Article 3.3 Substitutions

REPLACE THE FOLLOWING PARAGRAPH:
3.3.2.1 Request for substitution shall be accompanied by an executed copy of the Substitution Request Form. A sample copy is attached to the end of these Supplemental Instructions. The Substitution Request Form must be received at Hummel Architects PLLC Office within 5 working days prior to the date of receipt of bids. Requests received after the time frame stipulated will not be reviewed for consideration.

Section 3.4 Addenda

*DELETE PARAGRPH **3.4.3** AND REPLACE WITH THE FOLLOWING*: No Addenda will be issued later than three (3) working days prior to the date for receipt of Bids, unless that addendum also extends the bid date.

Section 4.2 Bid Security

ADD THE FOLLOWING PARAGRAPHS:
4.2.1.1 To be considered Bids must be accompanied by an acceptable Bid Security, in an amount not less than five (5) percent of the total amount including Additive Alternates of the bid. The security may be in the

form of a bond, cash, a certified check, or cashier's check.

4.2.2 A standard surety bid bond form meeting all the conditions of AIA document A310 is acceptable.

4.2.3.1 Upon request, the Bidders' security will be returned promptly after the Owner and the accepted bidder have executed a contract, or, if no award has been made within 60 days after the opening of bids; upon demand of the Bidder at any time thereafter, so long as he has not been notified of the acceptance of his/her Bid.

*REPLACE PARAGRAPH **4.2.4** with the following*:
4.2.4 A successful Bidder who fails to sign the Contract for the Work or furnish the required bonds within 10 days after he has received notice of acceptance of his/her bid, shall forfeit his/her security deposit. The Owner may then award the Contract to the next lowest bidder, in which even any excess of the lowest bidder's security over the difference between the lowest and next lowest bids will be returned to the lowest bidder or, if a bidder's bond is used, to the surety.

Section 4.3 Submission of Bids

ADD PARAGRAPH 4.3.1.1 AS FOLLOWS: Sealed bids shall include project name plainly marked on the outside
of the envelope.

Section 5.2 Rejection of Bids

*ADD PARAGRAPH **5.2.1** AS FOLLOWS*: The Owner may reject all bids when it is in the best interest of the Owner.

Section 5.3 Acceptance of Bid

*REPLACE PARAGRAPH **5.3.1** WITH THE FOLLOWING*: In determining the lowest responsive bid, the Owner will consider whether the Bidder is a responsible bidder as described in the Idaho Code.

ADD SECTION 5.4 OTHER REQUIREMENTS

ADD THE FOLLOWING PARAGRAPHS:
5.4.1 The project is not financed in whole or in part by Federal Aid Funds. Bids will be accepted from those contractors only (prime contractors, subcontractors, and/or specialty contractors) who, prior to the bid opening, hold current licenses as public works contractors in the state of Idaho.

5.5.1 Bids shall be based on the provisions of Section 44-1001 and 44-1002 of the Idaho Code dealing with labor preference.

Section 6.2 Owner’s Financial Capability

DELETE PARAGRAPH **6.2**

Section 6.3 Submittals

DELETE PARAGRAPH **6.3.3** AND **6.3.4** AND SUBSTITUTE THE FOLLOWING:

6.3.3 Prior to the award of Contract, the Contractor shall submit to the Owner the Contractor's Affidavit Concerning Taxes form completed as required. A sample of this form is attached to the end of these Supplementary Instructions.

6.3.4 Prior to the signing the Contract, Contractor shall submit to the Owner the following certificates or proof thereof to the Pocatello / Chubbuck School District: Builder's Risk Insurance, Liability Insurance, and Worker's Compensation Insurance.

6.3.5 Prior to signing of the Contract, Contractor shall sign and submit a notice confirming to the District that the contractor will prohibit any persons in his employ who are registered or required to register under the Idaho Sex Offender Registration Act from participation in on this project if such participation would require them to be present on school property. The notice further states that, by signing, you confirm that the contractor has cross checked such employees against the National Sex Offender Registry found at the following web link: http://www.nsopr.gov.

Section 7.1 Bond Requirements

*REPLACE PARAGRAPH **7.1.1** with the following*:
7.1.1 Performance Bond and Labor and Payment Bond are required for this project in the amount of 100% of the Contract Amount for each Bond, and by a surety company authorized to do business in Idaho.

Section 7.2 Time of Delivery and Form of Bonds
*REPLACE THE FIRST SENTENCE IN PARAGRAPH **7.2.1** WITH THE FOLLOWING*: The Bidder shall deliver the required bonds to the Owner prior to the date of execution of the Contract.

Section 8 Form of Agreement between Owner and Contractor

ADD THE FOLLOWING SENTENCE: Contractor shall execute and return the Agreement within seven (7) calendar days of receipt.

ADD: Section 9 Other Provisions

ADD THE FOLLOWING PARAGRAPHS:
9.1 Request For Clarification, Protest of Bid Requirements, Standards, Specs Or Process: Any Bidder who wishes to request clarifications, or protest the requirements, standards, specifications or processes outlined in this Request for Bid may submit a written notification to the Owner, to be received no later than five (5) working days prior to the Bid opening date. The notification will state the exact nature of the clarification, protest, describing the location of the protested portion or clause in the Bid document and explaining why the provision should be struck, added, or altered, and contain suggested corrections. The Owner may either deny the protest, require that the Bid document be modified, modify the Bid, and/or reject all or part of the protest. Changes to these specifications will be made by written addendum. No verbal clarifications will be binding on the Owner or Bidder. Questions may be submitted by fax or email.

Address written questions to**:**

Jacob Rivard
c/o Hummel Architect PLLC
2785 N. Bogus Basin Road
Boise ID 83702
Fax: 208-343-0940
Email: jrivard@hummelarch.com

9.2 Protest of Contractor Selection or Contract Award: Any actual proposer who is aggrieved in connection with the selection of a contractor or award of the contract or bid may submit a protest to Bart Reed, Director of Business. The protest shall be submitted in writing within seven (7) calendar days after such aggrieved person knows or should have known the facts which give rise to the protest. The protest must set forth in specific terms the alleged reason the Vendor selection or contract award is erroneous.

Address written protest to:
Bart Reed, Director of Business
Pocatello / Chubbuck SD25
3115 Pole Line Rd.
Pocatello, ID 83201

9.3 Public Records: Pocatello / Chubbuck SD25 is a public agency. Bids are public records and, except as noted below, will be available for inspection and copying by any person. If any Bidder claims any material to be exempt from disclosure under the Idaho Public Records Law, the Bidder shall expressly agree to defend, indemnify and hold harmless Pocatello / Chubbuck SD25 from any claim or suit arising from the Pocatello / Chubbuck SD25 refusal to disclose any such material. No such claim of exemption shall be valid or effective without such express agreement. The Pocatello / Chubbuck SD25 will take reasonable efforts to protect any information marked "confidential" by the Bidder, to the extent permitted by the Idaho Public Records Law. Confidential information must be submitted in a separate envelope, sealed and marked "Confidential Information" and will be returned to the Bidder upon request, after the award of the contract. It is understood, however, that Pocatello / Chubbuck SD25 will have no liability for disclosure of such information. Any proprietary or otherwise sensitive information contained in or with any Bid is subject to potential disclosure.

9.4 Protection:

A. The General Contractor shall maintain all existing protections and provide and maintain all additional protections as required by the governing laws, rules, regulations and ordinances. Contractor shall also erect and maintain all barriers necessary to enclose and protect structures, work and equipment from trespass by unauthorized persons. All shall be removed from the premises when directed, and/or completion of all work.

B. Protections and methods of protections shall be the responsibility of the Contractor until the completion of all work under this contract.

END OF SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

ATTACHMENTS:
SUBSTITUTION REQUEST FORM
CONTRACTOR'S AFFIDAVIT CONCERNING TAXES

SUBSTITUTION REQUEST FORM

TO: Hummel Architect PLLC, 2785 N. Bogus Basin Road, Boise ID 83702

PROJECT: Pocatello High School Addition

We hereby submit for your consideration the following product instead of the specified item for the above project:

Section Paragraph Specified Item

_____

Attach complete technical data, including product description, specifications, drawings, photographs, performance and test data adequate for evaluation of request. Also attach description of changes to Contract Documents required by proposed substitution for proper installation.

Differences between proposed substitution and specified item:

_____
_____
_____
_____

What affect does proposed substitution have on the product being purchased?

_____
_____

The undersigned certifies that the function, appearance, and quality are equivalent or superior to the specified item. Undersigned further certifies that the proposed substitution does not affect dimensions shown on the drawings, will not have adverse impact on other trades, construction schedule or specified warranty requirements, and that maintenance and service is available locally or readily obtainable. The undersigned agrees to pay for changes to the design caused by the proposed substitution (if any).

Submitted By:

_____
Signature Name (Printed) Firm

_____
Address, City, State Phone Fax

☐ Accepted By: _____
☐ Not accepted Date: _____
☐ Accepted as noted Remarks: _____
☐ Received too late _____

CONTRACTOR'S AFFIDAVIT CONCERNING TAXES

Project: Pocatello High School Addition
Project Address: 325 N. Arthur Ave, Pocatello, ID 83204

STATE OF _____)
) ss.
COUNTY OF _____)

Pursuant to the Idaho Code, Title 63, Chapter 15, I, the undersigned, being duly sworn, depose and certify that all taxes, excises and license fees due to taxing units in the State of Idaho, for which I or my property is liable then due or delinquent, have been paid, or secured to the satisfaction of the respective taxing units.

_____
(Name of Contractor)

_____

_____
Address

_____
City and State

By: _____
(Signature)

Subscribed and sworn to before me this _____ day of _____, 20__.

_____
Notary Public:

Residing at: _____

_____
Commission Expires

POCATELLO/CHUBBUCK
SCHOOL DISTRICT NO. 25
Bannock County, Idaho

CONSTRUCTION CONTRACT

This contract is made and entered into, effective as of _____**, 2020**, by and between School District No. 25, Bannock County, Idaho, ("Owner"), and _____. ("Contractor"), a company duly licensed as a public works contractor in the State of Idaho, as follows:

1. **DESCRIPTION OF WORK.** Contractor shall perform the following described work, in accordance with the contract plans and specifications, more particularly described below:

2020 Pocatello High School Renovation, Phase II

2. **CONTRACT DOCUMENTS.** The Contract Documents consist of this Agreement, Hummel Architects AIA Documents, Conditions of the Contract (General, Supplementary and other Conditions), Drawings Specifications, Addenda issues prior to execution of this Agreement, Bidder Certification Form, Contractor Affidavit concerning alcohol and drug-free workplace, other documents listed in this Agreement and Modifications issued after execution of this Agreement; these form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreement either written or oral.

3. **CONTRACT PRICE.** Owner agrees to pay Contractor, for the work described, the total price of: $685,759. Payment of this amount is subject to additions or deductions in accordance with the provisions of this contract.

4. **UNIT PRICES**. Unit prices, if any, are as follows:

"NONE" or IDENTIFY BY LINE ITEMS

5. **PAYMENT SCHEDULE.** Based upon applications for payment, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided in these Contract Documents.

Each Application for Payment shall be based on the most recent statement of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form and supported by such data to

substantiate its accuracy as the Owner may require. This schedule, unless objected to by the Owner, shall be used as a basis for reviewing the Contractor's Applications for Payment.

Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials, or equipment, which have not been delivered and stored at the site.

Owner shall make final payment to Contractor no later than 30-days after the issuance of the final Certificate for Payment or within thirty (30) days after the work is completed, if the contract is at that time fully performed, and subject to the condition that final payment shall not be due until Contractor has delivered to Owner a complete release of all liens arising out of the contract, or receipts in full covering all labor, materials, and equipment for which a lien could be filed. Notwithstanding the above, Owner will retain five percent of the contract price from the final payment to be released to the Contractor when the Owner receives a tax release from the Idaho State Tax Commission. The five percent retainage may be used by Owner to offset any and all losses incurred by Owner in the course of the performance of the Contract by Contractor, including but not limited to tax liens, defective performance, defective products – including those of subcontractors or other damage caused by Contractor in the performance of this Contract. Owner shall provide Contractor with a written itemization of all sums retained by Owner at the time of its issuance of final payment. Under no circumstances shall Owner retain more than five percent of the contract price without written agreement of Contractor. In the event that progress payments will be made under this contract, the payment schedule will be set forth below or in an attachment hereto:

> *Provided that an Application for Payment is received by the Owner not later than the Twenty Fifth (25th) day of a month, the Owner shall make payment to the Contractor not later than the Fifteenth (15th) day of the following month. If an Application for Payment is received by the Owner after the application date fixed above, payment shall be made by the Owner not later than Thirty (30) days after the Owner receives the Application for Payment."*

6. **EFFECT OF PAYMENT.** Owner by making payment waives all claims except those arising out of:

   A. Faulty work appearing after final payment is made;

   B. Work that does not comply with this contract;

   C. Outstanding claims of lien; or

   D. Failure of Contractor to comply with any special guarantees required by the contract. Contractor, by accepting final payment, waives all claims except those that he has previously made in writing, and which remain unsettled at the time of acceptance.

7. **STARTING AND COMPLETION DATES**. Construction under this contract shall begin on _____and be completed by _____.

8. **RESPONSIBILITIES OF OWNER**. Owner shall furnish all necessary surveys for the work, and shall secure and pay for easements for permanent structures or permanent changes in existing structures or facilities on the work site, or which are necessary for its proper completion.

Owner reserves the right to let other contracts for construction work to be performed at the work site. Contractor shall cooperate with all other contractors to the effect that their work shall not be impeded by his construction, and shall give such other contractors access to the work site necessary to perform their contracts.

9. **RESPONSIBILITIES OF CONTRACTOR.** Contractor's duties and rights in connection with the above-described project are as follow:

A. Responsibility for the Supervision of Construction. Contractor shall be solely responsible for all construction under this contract, including the techniques, sequences, procedures, and means, and for coordination for all work. Contractor shall supervise and direct the work to the best of his ability, and give it all the attention necessary for such proper supervision and direction. The project shall be completed in a proper, workmanlike manner, consistent with the highest standards of quality in the community.

B. Furnishing of Labor, Materials, etc. Contractor shall provide and pay for all labor, materials, and equipment, including tools, equipment, and machinery, utilities, including water, transportation, and all other facilities and services necessary for the proper completion of work on the project in accordance with the contract. Ninety-five percent (95%) of Contractor's employees must be bona fide Idaho residents as required by Idaho Code § 44-1001.

C. Procurement of Licenses and Permits. Contractor shall pay all taxes required by law in connection with work on the project in accordance with this contract including sales, use, and similar taxes, and shall secure all licenses and permits necessary for proper completion of the work, paying the fees for such licenses and permits. Contractor represents that he is authorized to do business in the State of Idaho and, pursuant to Idaho Code §63-1502, shall provide evidence that he is so qualified.

D. Payment of Taxes.

i. Pursuant to Idaho Code §63-1503, Contractor agrees to pay promptly when due all taxes (other than on real property), excises and license fees due to the state, its subdivisions, and municipal and quasi-municipal corporation therein accrued or accruing during the term of this contract, whether or not the same shall be payable at the end of such term. If the said taxes, excises, and license fees are not payable at the end of said term, but liability for the payment thereof exists, even though the same constitute liens upon his property, to secure the same to the satisfaction of the respective officers charged with the collection thereof. In the event of the Contractor's default in the payment or securing of such taxes, excises, and license fees, the Contractor hereby consents that the Owner may withhold from any payment due to the Contractor under this contract, the estimated amount of such accrued and accruing taxes, excises, and license fees for the benefit of all taxing units to which said Contractor is liable.

ii. Pursuant to Idaho Code §63-1502, Contractor shall provide evidence that he has paid or secured to the satisfaction of the respective taxing units, as defined in Idaho Code §63-1501, all taxes for which he or his property is liable then due or delinquent.

iii. Pursuant to Idaho Code §63-1504, before Owner shall approve any claim on account of construction work performed as required by this contract, Contractor (or any sub-contractor claimant) must furnish evidence to Owner that he (i.e. Contractor or any sub-contractor, as the case may be) has paid all taxes, excises and license fees due to the state and its taxing units, due and payable during the term of this contract for such construction, and that he has secured all such taxes, excises, and license fees liability for the payment of which has accrued during the term of this contract, notwithstanding they may not yet be due or payable.

E. Except as otherwise provided in Idaho Code §44-1002, Contractor must employ ninety-five percent (95%) bona fide Idaho residents as employees on the project unless fifty (50) or less persons are employed in which event Contractor may employ ten percent (10%) nonresidents, provided however, in any case Contractor must give preference to the employment of bona fide residents in the performance of said work.

F. Compliance with Construction, State, and Federal Laws and Regulations. Contractor shall comply with all laws and ordinances, and the rules, regulations, or orders of all public authorities relating to the performance of the work under and pursuant to this contract. If any of this contract is at variance with any such laws, ordinances, rules, regulations, or orders, he shall notify Owner promptly on discovery of such variance. The Contractor must notice the District of any Registered Sex Offenders working on School Property and obtain written permission from the District prior to the commencement of any work.

G. Responsibility for Negligence of Employees and Subcontractors. Contractor assumes full responsibility for acts, negligence, or omissions of all his employees on the project, for those of his subcontractors and their employees, and for those of all other persons doing work under a contract with him. Smoking and alcohol are prohibited on school property. Unauthorized persons are not allowed on the job site.

H. Warranty of Fitness of Equipment and Materials. Contractor represents and warrants to Owner that all equipment and materials used in the work, and made a part of the structures on such work, or placed permanently in connection with such work, will be new, of good quality, free of defects, and in conformity with this contract. It is understood and agreed between the parties to this contract that all equipment and materials not so in conformity will be considered defective.

I. Clean-up. Contractor agrees to keep the work premises and adjoining ways free of waste material and rubbish caused by his work or that of his subcontractors. Contractor further agrees to remove all such waste material and rubbish on termination of the project, together with all of his tools, equipment, machinery, and surplus materials. Contractor agrees, on terminating his work at the site, to conduct general clean-up operations, including the cleaning of all glass surfaces, paved streets and walks, steps, and interior floors and walls.

J. Indemnity and Hold Harmless Agreement.

i. Contractor agrees to indemnify and hold harmless Owner, and its agents and employees, from and against any and all claims, damages, losses, and expenses, including reasonable attorney's fees in case it shall be necessary to file an action, arising out of performance of the work in this contract, that is (a) for bodily injury, illness, or death, or for property damage, including loss of use, and (b) caused in whole or in part by Contractor's intentional and/or negligent act or omission, the act of an employee or agent of the Contractor or that of a subcontractor.

ii. Contractor further agrees to indemnify, save harmless, and make whole, Owner from any and all defects appearing or developing in the workmanship or materials performed or furnished under this Contract for a period of one (1) year after the acceptance thereof by Owner.

K. Performance and Payment Bonds. Contemporaneously with the execution of this contract, Contractor shall provide performance and payment bonds in the form required by Idaho Code § 54-1926. The bonds shall be eighty-five percent (100%) of the contract price and shall provide Owner with security for faithful performance of the contract and also provide security for protection of persons supplying labor and/or materials for the contract.

10. **TIME OF ESSENCE; EXTENSION OF TIME.** All times stated in this contract are of the essence. The time stated in this contract may be extended by a change order from Owner for such reasonable time as it may determine, when in its opinion Contractor is delayed in work progress by changes ordered, labor disputes, fire, prolonged transportation delays, injuries, or other causes beyond Contractor's control or which justify the delay. Otherwise, in the event the project is not completed by the scheduled completion date, Contractor shall be required to pay Owner as liquidated damages the sum of $1,000 f or each calendar day, after the scheduled completion date, that the project is unfinished.

11. **SUBCONTRACTORS.** Contractor agrees to furnish Owner, prior to the execution of this contract, with a list of names of subcontractors to whom he proposes to award the principal portions of the work to be subcontracted by him.

A subcontractor, for the purposes of this contract, shall be a person with whom Contractor has a direct contract for work at the project site.

Contractor agrees not to employ a subcontractor to whose employment Owner reasonably objects, nor shall Contractor be required to hire a subcontractor to whose employment he reasonably objects.

All contracts between Contractor and subcontractor shall conform to the provisions of this contract, and shall incorporate in them the relevant provisions of this contract.

12. **ARBITRATION.** All claims and disputes relating to this contract shall be subject to arbitration at the option of either Owner or Contractor in accordance with the Arbitration Rules of the American Arbitration Association for the construction industry.

A. A formal written demand for Arbitration shall be filed with BOTH the other party to this contract AND with the American Arbitration Association, within a reasonable time after the dispute has arisen, but NOT LATER THAN SIXTY (60) DAYS after the claim or dispute arose.

B. A "claim" or "dispute" under this Paragraph arises when the claiming or disputing party FIRST knew or reasonably should have known of the subject matter of the "claim" or "dispute." The purpose of this Paragraph is to encourage the prompt resolution of any and all "claims" or "disputes." As a result, any doubts regarding the determination of when such notice occurred shall be resolved by giving all due deference to the EARLIEST date of notice. The determination of when a "claim" or "dispute" occurred shall not be determined by reference to the date where an "impasse" had occurred.

C. The Arbitrator is authorized to award reasonable attorney fees to the prevailing party.

13. **INSURANCE.** Contractor agrees to keep in force at his own expense during the entire period of construction on the project such liability insurance as will protect him from claims, under workers' compensation and other employee benefit laws, for bodily injury and death, and for property damage, that may arise out of work under this contract, whether directly or indirectly by Contractor, or directly or indirectly by a subcontractor. The minimum liability limits of such insurance shall not be less than the limits required by law for that type of damage claim. Proof of such insurance shall be filed by Contractor with Owner within a reasonable time after execution of this contract. Contractor shall be responsible for insuring all construction materials, tools and equipment stored at the job site.

14. **CORRECTING WORK.** When it appears to the Owner or the Contractor during the course of construction that any work does not conform to the provisions of this contract, Contractor shall make necessary corrections so that such work will so conform, and in addition will correct any defects caused by faulty materials, equipment, or quality of performance in work supervised by him or by a subcontractor, appearing within one (1) year from the date of final payment, or within such longer period as may be prescribed by law.

15. **WORK CHANGES.** Owner reserves the right to order work changes in the nature of additions, deletions, or modifications, without invalidating this contract, and agrees to make corresponding adjustments in the contract price and time for completion.

All changes will be authorized by a written change order signed by Owner. The change order will include conforming changes in the contract price and completion time.

Work shall be changed, and the contract price and completion time shall be modified only as set out in the written change order. No work is to be initiated without the written change order in place.

Any adjustment in the contract price resulting in a credit or a charge to Owner shall be determined by mutual contract of the parties, or by arbitration, before starting the work involved in the change.

The total allowance for combined overhead and profit for changes shall be included in the total cost to the owner and shall be based on the following schedule.

A. For the Contractor, 10% over cost.

B. For the Sub-Contractor, 15% over cost to be divided 10% for Sub-Contractor and 5% for Contractor.

C. For any Sub-Subcontractor, 15% over cost to be divided 5% for Contractor, 5% for Sub-Contractor, and 5% for Sub-Subcontractor.

16. **CONTRACTOR'S TERMINATION.** Owner may, on five days' notice to Contractor, terminate this contract before the completion date specified in this contract, or extended times provided by approved change orders, and without prejudice to any other remedy they may have, if Contractor defaults in performance of any provision in this contract, or fails to carry out his work in accordance with the provisions of the contract documents. If the unpaid balance on the contract price at the time of such termination exceeds the expense of finishing the work, owners will pay such excess to Contractor. If the expense of finishing the work exceeds the unpaid balance at the time of termination, Contractor agrees to pay the difference to Owners.

17. **GOVERNING LAW.** It is agreed that this contract shall be governed by, construed, and enforced in accordance with the laws of the State of Idaho.

18. **GENDER AND NUMBER.** As used in this contract, the masculine, feminine, or neuter gender, and the singular or plural number, each shall be deemed to include the other whenever the context so indicates.

19. **ATTORNEY FEES.** In the event that any action, including Arbitration, is filed in relation to this contract, the unsuccessful party in the action shall pay to the prevailing party, in addition to all the sums that either party may be called on to pay at Arbitration, a reasonable sum for the successful party's attorney's fees.

20. **ENTIRE AGREEMENT.** This contract shall constitute the entire agreement between the parties and any prior understanding or representation of any kind preceding the date of this contract shall not be binding upon either party except to the extent incorporated in this contract.

21. **MODIFICATION OF AGREEMENT.** Any modification of this contract or additional obligation assumed by either party in connection with this agreement shall not be binding upon either party except to the extent an amendment in writing, executed by both the Owner and the Contractor.

22. **NOTICES.** Any notice provided for or concerning this contract shall be in writing and be deemed sufficiently given when sent by certified or registered mail and addressed as follows:

To: Owner
School District No. 25
3115 Pole Line Rd.
Pocatello, ID 83201

To: Contractor

23. **ASSIGNMENT OF RIGHTS**. The rights of each party under this contract are personal to that party and may not be assigned or transferred to any other person, firm, corporation, or other entity without the prior, express, and written consent of the other party.

24. **PARAGRAPH HEADINGS**. The titles to the paragraphs of this contract are solely for the convenience of the parties and shall not be used to explain, modify, simplify, or aid in the interpretation of the provisions of this contract.

IN WITNESS WHEREOF the parties have executed this contract on the date indicated below:

CONTRACTOR:
(Name of Contractor)

Dated: _____ By: _____

Title: _____

Attest: _____

OWNER:
School District No. 25
Bannock County, Idaho

Dated: _____ By: _____

Bart J. Reed
Director of Business Operations

Attest: _____

BIDDER CERTIFICATION FORM

1. **Debarment and Suspension** – In submitting this bid proposal, we hereby certify that we have not been suspended or in any way excluded from Federal procurement actions by any Federal Agency. We fully understand that if information contrary to this certification subsequently becomes available, such evidence may be grounds for non-award or nullification of a bid contract.

2. **Anti-Collusion** – In submitting this bid proposal, we hereby certify this proposal was developed and prepared without any collusion with any competing bidder or District employee. The content of this proposal has not been disclosed to any competing or potentially competing bidder prior to the proposal due date and time. Furthermore, no action to persuade any person, partnership or corporation to submit or withhold a bid has been made.

3. **Anti-Lobbying** – In submitting this bid proposal, we hereby certify that to the best of our knowledge and belief, no appropriated Federal funds have been paid or will be paid by or on behalf of person associated with this proposal to any person for influencing or attempting to influence and officer or employee of any agency, a member of Congress, an office or employee of Congress or an employee of a member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement and the extension, continuation, renewal, amendment or modification of any Federal contract, grant, loan or cooperative agreement.

4. **National Sexual Offender Registry** – In submitting this bid proposal, you certify to the District that your company will prohibit any persons in your employ who are registered or required to register under the Idaho Sex Offender Registration Act from participation in company business with the District if such participation would require them to be present on school property. You certify further that you have cross checked such employees against the National Sex Offender Registry found at the following web link: http://www.nsopr.gov/

Signed: _____ Date: _____

Name & Title: _____ Phone: _____

Company: _____

Address: _____

City/State: _____

CONTRACTOR'S AFFIDAVIT
CONCERNING ALCOHOL AND DRUG-FREE WORKPLACE

STATE OF _____

COUNTY OF _____

Pursuant to the Idaho Code, Section 72-1717, I, the undersigned, being duly sworn, depose and certify that named contractor is in compliance with the provisions of Idaho Code section 72-1717; that named contractor provides a drug-free workplace program that complies with the provisions of Idaho Code, title 72, chapter 17 and will maintain such program throughout the life of a state construction contract and that named contractor shall subcontract work only to subcontractors meeting the requirements of Idaho Code, section 72-1717(1)(a).

_____
Name of Contractor

_____
Address

_____
City and State

By: _____
(Signature)

Subscribed and sworn to before me this _____ day of _____, 2020.

Commission expires: _____

_____
NOTARY PUBLIC, residing at

_____

SECTION 03 3000 – CAST IN PLACE CONCRETE

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.

B. References and standards listed herein are to be the latest edition available, unless specifically stated otherwise.

1.2 SUMMARY

A. This Section specifies cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:
1. Footings.
2. Foundation walls.
3. Slabs-on-grade, interior.
4. Suspended concrete filled metal deck slabs
5. Concrete curbs and pads.
6. Miscellaneous cast-in-place concrete.

B. Related Sections:
1. Section 035313 “Polished Concrete Finishing” for floor slab finishes where indicated.
2. Section 053100 “Steel Decking” for concrete-filled composite floor decks.
3. Section 072100 “Thermal Insulation” for perimeter insulation.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.4 REFERENCES

A. International Building Code (IBC), 2012 Edition.

B. American Concrete Institute (Latest Editions Accepted by the 2012 IBC):

C. ACI 301: Specification for Structural Concrete Buildings
1. .
2. ACI 347: Recommended Practice for Concrete Formwork.
3. ACI 318: Building Code Requirements for Structural Concrete.
4. ACI 117: Specification for Tolerances for Concrete Construction and Materials

D. ASTM D6817 - Standard Specification for Rigid, Cellular Polystyrene Geofoam.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of the following:
1. Cementitious materials.
2. Admixtures.
3. Form materials and form-release agents.
4. Steel reinforcement and accessories.
5. Waterstops.
6. Curing compounds.
7. Floor and slab treatments.
8. Bonding agents.
9. Adhesives.
10. Vapor retarders.
11. Semirigid joint filler.
12. Joint-filler strips.
13. Repair materials.
14. Foam insulation.
15. Submit EPS Geofoam manufacturer's product literature and TechData, including:
a. Physical properties in compliance with ASTM D6817 Type specified
b. Certificates: Manufacturer shall supply a product certificate showing evidence of Third Party Quality Control

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. Submit proposed mix designs at least 15 days in advance of placing operations for each concrete mixture. The submitted mix design shall include the following:

a. Supporting strength test data not more than 12 months old. At the Engineer's request, reports from the independent testing agencies may be required to document the test data. Reports from the independent testing agencies will be required if fly ash is used in the design mix.
b. Statistical analysis in compliance with ACI 301.
c. Gradation of fine and coarse aggregates not more than 90 days old (ASTM C 33). No substitution of aggregate type or size from those submitted will be permitted.
d. Proportions of all ingredients, including all admixtures added either at time of batching or at job site. Aggregate weights shall be based upon saturated surface dry conditions.
e. Water/cement ratio.
f. Slump (ASTM C 143): When high range water-reducing admixtures are used, slump before and after addition of admixture are required.
g. Air content of freshly mixed concrete (ASTM C 231).
h. Certification that all ingredients in each mix design are compatible.
i. Locations or intended use of each mix design.
j. Source of all materials.
k. 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.
1. Corner bars for providing for continuity of horizontal reinforcing around corners of footings, foundation walls, and other concrete items are required and shall be shown on shop drawings.
2. Provide details of fabrication, bending, and placement, prepared according to ACI 315, "Details and Detailing of Concrete Reinforcement." Include special reinforcement required for openings through concrete structures.
3. Shop drawing re-submittals shall clearly identify all revisions to previous submittals.

a. Heavy ink clouded outlines (revision clouds) shall be drawn around revised areas of individual sheets.
b. Architect/Engineer will not review information outside of revision clouds on resubmitted drawings.

4. Approval of shop drawings by the Architect shall not relieve the Contractor of providing all reinforcing noted, shown, or implied by the project Contract.

D. Embedded Item Placement Drawings: Drawings indicating the location and type of plates, anchorages, or other items to be embedded in the finished concrete surfaces. Include wall elevations, slab plans, and details required to locate and install embeds.

E. Samples: For waterstops and vapor retarder.

F. Saw Cut Joints: Indicate proposed locations for all saw cut joints not shown on the drawings.
1. Location of saw cut joints is subject to approval of the Architect.

G. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:
1. Aggregates.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer.

B. Welding certificates.

C. Written curing procedure, including curing procedures for hot- and cold-weather placement.

D. Floor surface flatness and levelness measurements indicating compliance with specified tolerances.

E. Field quality-control reports.

F. Minutes of preinstallation conference.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. 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.

C. Testing Agency Qualifications: An independent agency, according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.
1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.

D. 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.

E. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
   1. ACI 301, "Specifications for Structural Concrete," Sections 1 through 5.
   2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

F. Concrete Testing Service: Owner will engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

G. Special Inspections: Owner will engage an inspection agency to provide special inspections per Structural Notes on Drawings and as required by the International Building Code. Costs for such inspection shall be paid directly to the inspection agency by the Owner.

H. Mockups of Smooth Form Exposed Finish Concrete: Cast smooth form exposed finish concrete panels to demonstrate typical joints, surface finish, texture, tolerances, and standard of workmanship. Mockup to be included in overall wall mockup for architects approval.

I. Mockups of Slab Finishes: Cast concrete slab-on-grade panels to demonstrate typical joints, surface finish, texture, tolerances, and standard of workmanship.

J. Shoring and Bracing: Temporary shoring and bracing shall be the responsibility of the Contractor and where required by the Building Code or jurisdiction shall be designed by a licensed Structural Engineer registered in the State of Idaho. Costs of engineering shall be borne by the Contractor.

K. Structural Concrete: Structural concrete shall have a 28-day compressive strength of at least that required by structural design, codes, and standards specified with strengths as shown on the drawings.

L. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4/D 1.4M, "Structural Welding Code - Reinforcing Steel."

M. Preinstallation Conference: Conduct conference at Project site.
   1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:

      a. Contractor's superintendent.
      b. Independent testing agency responsible for concrete design mixtures.
      c. Ready-mix concrete manufacturer.
      d. Concrete subcontractor.
      e. Special concrete finish subcontractor.
   2. Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold- and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints, and joint-filler strips, semirigid joint fillers, forms and form removal limitations, shoring and reshoring procedures, vapor-retarder installation, anchor rod and anchorage device installation tolerances, steel reinforcement installation, floor and slab flatness and levelness measurement, concrete repair procedures, and concrete protection.

N. Coordinate chemical and adhesion compatibility of curing compounds used for curing concrete with coatings, stains, paints, liquid flashings, sealers, waterproofing membranes, joint sealants and other materials that penetrate, adhere to or otherwise come into contact with concrete surfaces that are specified in other sections.

O. Batch Tickets: Provide batch tickets for review by inspector for each truckload of concrete used in the work, indicating project identification name and number, date, mix type, mix time, quantity, and amount of cement and water introduced.

P. Concrete Finishing and Curing:
1. Obtain each type, composition, and variety of liquid membrane-forming curing compound used for the Project from the same manufacturer.
2. Products from more than one approved manufacturer may be used for different applications, however all products for like applications shall be by the same manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.

B. Store materials in accordance with ACI 301. Admixtures which have been in storage at the project site for longer than six months or which have been subjected to freezing shall not be used, unless retested and proven to meet the specified requirements.

C. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

1.9 COORDINATION AND SEQUENCING

A. Coordinate schedule with other trades where embedments, attachments, or interferences occur.

B. Schedule and sequence concrete work to coordinate with fabrication and delivery schedules for items to be embedded in concrete work.

1.10 FIELD MEASUREMENTS

A. Verify that field measurements and conditions are as shown on drawings, shop drawings, or as instructed by Product Manufacturer.

1.11 SYSTEM DESCRIPTION

A. Redesign or Departures from Requirements of the Contract Documents Initiated by Contractor:
1. Obtain written acceptance from the Architect and Architect’s consultants.
2. Bear costs for Contractor-initiated or construction error due to changes in type, form, system, or details of construction from those indicated by the contract documents.
3. Costs of review of such changes by Architect and Architect’s consultants will be deducted from the Contract Sum by Change Order.

1.12 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 for three successive days, maintain delivered concrete mixture temperature within the temperature range required by Do

not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

2. 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 and as follows:

1. Maintain concrete temperature below 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.

2 PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Products: Subject to compliance with requirements, provide one of the products specified.
2. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
3. Products or manufacturers other than those specified are subject to approval by Architect prior to bidding.

2.2 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

1. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:

    a. High-density overlay, Class 1 or better.
    b. Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.
    c. Structural 1, B-B or better; mill oiled and edge sealed.
    d. B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.

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. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.

D. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

E. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
2. Furnish ties that, when removed, will 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.

2.3 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

B. Low-Alloy-Steel Reinforcing Bars: ASTM A 706/A 706M, deformed at welded locations.

C. Deformed Welded-Wire Reinforcement: ASTM A 496/A 496M.

2.4 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. Tie Wire: Minimum 16 gage, ASTM A 82, or acceptable patented system.

C. Zinc Repair Material: ASTM A 780, zinc-based solder, paint containing zinc dust, or sprayed zinc.

D. 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.

2.5 CONCRETE MATERIALS

A. Cementitious Materials:
   1. Portland Cement: ASTM C 150, Type I/II, gray. Supplement with the following:
      a. Fly Ash: ASTM C 618, Class F.

B. Normal-Weight Aggregates: ASTM C 33/C 33M, Class 3M coarse aggregate or better, graded. Provide aggregates from a single source.
   1. Maximum Coarse-Aggregate Size: 3/4 inch nominal unless indicated otherwise on the drawings.
   2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Water: ASTM C 94/C 94M and potable.

2.6 ADMIXTURES

A. General:
   1. Admixtures certified by manufacturer to contain not more than 0.05 percent water-soluble chloride ions by mass of cementitious material. Do not use admixtures containing calcium chloride or thiocyanate.
   2. Where more than one admixture is used in the mix, furnish manufacturer's certification to the Architect that the admixtures to be used are compatible in combination with the cement and aggregates.
   3. Accelerating admixtures shall not be used.

B. Air-Entraining Admixture: ASTM C 260/C 260M.

C. 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.

2.7 WATERSTOPS

A. Flexible Rubber Waterstops: CE CRD-C 513, for embedding in concrete to prevent passage of fluids through joints. Factory fabricate corners, intersections, and directional changes.
   1. Manufacturers:
      a. Greenstreak.
      b. Progress Unlimited, Inc.
      c. Williams Products, Inc.
   2. Profile: As indicated.
   3. Dimensions: As indicated.

2.8 VAPOR RETARDERS

A. Sheet Vapor Retarder: ASTM E 1745, Class A. Include manufacturer's recommended adhesive or pressure-sensitive tape.
   1. Subject to compliance with requirements, provide one of the following:
      a. Carlisle Coatings & Waterproofing, Inc.; Blackline 400.
      b. Fortifiber Building Systems Group; Moistop Ultra 15.
      c. Grace Construction Products; W.R. Grace & Co. -- Conn.; Florprufe 129.
      d. Insulation Solutions, Inc.; Vapor Block VB 15.
      e. Raven Industries, Inc.; Vapor Block 15
      f. Reef Industries, Inc.; Griffolyn 15 mil Green.
      g. Stego Industries, LLC.; Stego Wrap 15 mil; Class A.
      h. W.R. Meadows, Inc.; Perminator 15 mil.

2.9 FLOOR AND SLAB TREATMENTS (Use where Sealed Concrete is indicated floor finish on Drawings)

A. Penetrating Liquid Floor Treatment: Clear, chemically reactive, waterborne solution of inorganic silicate or siliconate materials and proprietary components; odorless; colorless; that penetrates, hardens, and densifies concrete surfaces.
   1. Products:
      a. Burke by Edoco; Titan Hard.
      b. ChemMasters; Chemisil Plus.
      c. ChemTec International; ChemTec One.
      d. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; Intraseal.
      e. Curecrete Distribution Inc.; Ashford Formula.
      f. Dayton Superior Corporation; Day-Chem Sure Hard.
      g. Euclid Chemical Company (The); Euco Diamond Hard.

h. Kaufman Products, Inc.; SureHard.
i. L&M Construction Chemicals, Inc.; Seal Hard.
j. Meadows, W. R., Inc.; Liqui-Hard.
k. Metalcrete Industries; Floorsaver.
l. Nox-Crete Products Group, Kinsman Corporation; Duranox.
m. Symons Corporation, a Dayton Superior Company; Buff Hard.
n. US Mix Products Company; US Spec Industraseal.
o. Vexcon Chemicals, Inc.; Vexcon StarSeal PS.

2.10 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
1. Products:

a. Axim Concrete Technologies; Cimfilm.
b. Burke by Edoco; BurkeFilm.
c. ChemMasters; Spray-Film.
d. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; Aquafilm.
e. Dayton Superior Corporation; Sure Film.
f. Euclid Chemical Company (The); Eucobar.
g. Kaufman Products, Inc.; Vapor Aid.
h. Lambert Corporation; Lambco Skin.
i. L&M Construction Chemicals, Inc.; E-Con.
j. MBT Protection and Repair, Div. of ChemRex; Confilm.
k. Meadows, W. R., Inc.; Sealtight Evapre.
l. Metalcrete Industries; Waterhold.

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.
1. Products:

a. Dayton Superior Corporation; Sure Film.
b. Euclid Chemical Company (The); Eucobar.
c. Sika Corporation, Inc.; SikaFilm.

2.11 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.

B. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, aromatic polyurea with a Type A shore durometer hardness range of 90 to 95 according to ASTM D 2240.

C. Bonding Agent: ASTM C 1059/C 1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.

D. Dovetail Anchor Slots: Hot-dip galvanized steel sheet, not less than 0.0336 inch thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

E. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:
   1. Types I and II, nonload bearing and Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

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.
   1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
   1. Fly Ash: 15 percent.

C. Limit water-soluble, chloride-ion content in hardened concrete to 0.06 percent by weight of cement.

D. Admixtures: Use admixtures according to manufacturer's written instructions.
   1. Use water-reducing, high-range water-reducing, or plasticizing admixture in concrete, as required, for placement and workability.
   2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
   3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a w/c ratio below 0.50.

2.13 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. All concrete mixture requirements are indicated in the approved drawings. Design requirements include, but not limited to, design strength at 28 days, slump and water-cement ratio.

2.14 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."
   1. Corner bars to provide continuity of all horizontal reinforcing around corners of footings, foundation walls, and other concrete items are required. Bending and straightening in accordance with ACI 318, Chapter 7, unless otherwise noted on the drawings. No bending or straightening of reinforcement will be permitted after partial embedment in concrete. Heating of reinforcement will be permitted only if the entire operation is approved.

B. Welding and tacking of reinforcing bars is not permitted, unless specifically shown on the structural drawings. When welding of reinforcement is indicated and required, provide welds in accordance with AWS D1.4.

C. Splicing:
   1. Reinforcing bars shall be lap spliced for tension with lap lengths as noted on the structural drawings.

2. Welding or tack welding of reinforcing bars to other bars or to plates, angles, etc., is prohibited, except where specifically detailed on the approved shop drawings. Where welding is approved, it shall be done by AWS/WABO-Certified Welder using E9018 or approved electrodes. Welding procedures shall conform to the requirements of AWS D1.4.
3. Locate reinforcing splices not indicated on the drawings at points of minimum stress.

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.

2.16 EPS GEOFOAM

A. Foam-Control EPS Geofoam in compliance with ASTM D6817.

B. Select one or more of the Foam-Control EPS Geofoam Types from the listings as follows, as required by the project:
1. Foam-Control EPS Geofoam: ASTM D6817 **Type EPS15**.

C. All Foam-Control EPS Geofoam blocks shall be treated by the manufacturer with a tested and proven termite treatment for below grade applications, 3 year minimum field exposure. The treatment shall be EPA registered, meet requirements of ICC ES EG239, and be recognized in an ICC ES report.

3 EXECUTION

3.1 FORMWORK

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 B, 1/4 inch for rough-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
1. Install keyways, reglets, recesses, and the like, for easy removal.
2. 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 as shown on drawings.

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.

3.2 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. 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.
   2. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
   3. Install dovetail anchor slots in concrete structures as indicated.

B. All sleeves, anchor bolts, dowels, and reinforcing items, together with anchors, weld plates, bearing plates, etc. to be set in concrete, shall be positioned and securely anchored in place prior to placement of concrete. Such items shall not be pushed into freshly placed concrete. Remove all oil, grease, dirt, debris, and corrosion from such items prior to placement.

C. Where work of other sections require openings for passage of pipes, conduits, ducts, and other inserts in the concrete, obtain all dimensions and other information. All necessary pipe sleeves, anchors, or other required inserts shall be accurately installed as part of the work of other sections, according to following requirements:
   1. Conduits or Pipes:

      a. Footings:

         1) Locate so as not to reduce the strength of concrete. In no case place pipes, other than conduits, in a footing 4-1/2" thick or less. Conduit buried in a concrete footing shall not have an outside diameter greater than 1/3 the footing thickness nor be placed below the bottom reinforcing steel or over the top reinforcing steel.

      b. Slab on Grade or Elevated Slabs:

1) In no case place pipes or conduits in an elevated slab or slab on grade.

2. Conduits and pipes of aluminum shall not be embedded in structural concrete unless coated or covered to prevent aluminum-concrete reaction or electrolytic action between aluminum and reinforcing steel.
3. Sleeves: Pipe sleeves may pass through slabs or walls if not exposed to rusting or other deterioration and are of uncoated or galvanized iron or steel. Provide sleeves of diameter large enough to pass any hub or coupling on pipe, including any insulation.
4. Conduits: Conduits may be embedded in walls only if the outside diameter does not exceed 1/3 the wall thickness, are spaced no closer than 3 diameters on centers and do not impair the strength of the structure.
5. Clusters of Conduits:

   a. Clusters of conduits embedded in a concrete slab shall not exceed 6 conduits per cluster and each conduit per cluster shall be individually spaced as per the above requirements. Conduit clusters shall be reviewed and approved by the structural engineer of record prior to the installation of the conduits.
   b. If more than one conduit cluster is required in a specific area of the slab, routing and spacing of the clusters shall be reviewed and approved by the structural engineer of record prior to the installation of the conduits.
   c. At no time shall the quantity and routing of clusters of conduits impair the strength of the concrete construction.

3.3 REMOVING AND REUSING FORMS

A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations need to be maintained.
   1. Leave formwork for beam soffits, joists, slabs, and other structural elements that support weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
   2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

B. 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.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 SHORES AND RESHORES

A. Comply with ACI 318 and ACI 301 for design, installation, and removal of shoring and reshoring.
   1. Do not remove shoring or reshoring until measurement of slab tolerances is complete.

B. In multistory construction, extend shoring or reshoring over a sufficient number of stories to distribute loads in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members without sufficient steel reinforcement.

C. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

3.5 VAPOR-RETARDERS

A. Plastic 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.
   2. Seal all penetrations (pipe, conduit, etc.) with manufacturer’s prefabricated boots or seals.

3.6 STEEL REINFORCEMENT

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.
   1. Weld reinforcing bars according to AWS D1.4/D 1.4M, where indicated.

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. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.7 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. Do not continue reinforcement through sides of strip placements of floors and slabs.
   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.

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-fourth 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, specified in Section 079200 "Joint Sealants," are indicated.
   3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.8 WATERSTOPS

A. Flexible Waterstops: Install in construction joints and at other joints indicated to form a continuous diaphragm. Install in longest lengths practicable. Support and protect exposed waterstops during progress of the Work. Field fabricate joints in waterstops according to manufacturer's written instructions.

3.9 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.

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.
   3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

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.

E. 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.

F. Hot-Weather Placement: Comply with ACI 301 and as follows:
   1. Maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
   2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.10 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, to receive a rubbed finish, or to be covered with a coating or covering material applied directly to concrete.

C. Rubbed Finish: Apply the following to smooth-formed-finished as-cast concrete only where indicated:
   1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.

D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.11 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, 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 restraightening 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, for a randomly trafficked floor surface:

    a. Specified overall values of flatness, F(F) 35; and of levelness, F(L) 30; with minimum local values of flatness, F(F) 30; and of levelness, F(L) 25; for slabs-on-grade.
    b. Specified overall values of flatness, F(F) 30; with minimum local values of flatness, F(F) 25; for suspended slabs.

D. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces where ceramic or quarry tile is to be installed by either thickset or thinset method. While concrete is still plastic, slightly scarify surface with a fine broom.

1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.

E. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and 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.

3.12 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.

D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel finish concrete surfaces.

3.13 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. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for 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.

E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
   1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
      a. Water.
      b. Continuous water-fog spray.
      c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
   2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.

      a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
      b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
      c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies does not interfere with bonding of floor covering used on Project.
   3. Curing Compound: Apply uniformly in 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.

      a. After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound does not interfere with bonding of floor covering used on Project.

3.14 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
   1. Defer joint filling until concrete has aged at least one month. Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of 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.

3.15 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. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
   1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
   2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar matches surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
   3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
   1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
   2. After concrete has cured at least 14 days, correct high areas by grinding.
   3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
   4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
   5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
   6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
   7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.16 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform tests and inspections and to submit reports.

B. Inspections may include the following:
1. Steel reinforcement placement.
2. Steel reinforcement welding.
3. Headed bolts and studs.
4. Verification of use of required design mixture.
5. Concrete placement, including conveying and depositing.
6. Curing procedures and maintenance of curing temperature.
7. Verification of concrete strength before removal of shores and forms from beams and slabs.
8. Epoxy-set anchors and dowels.

C. Concrete Tests: Testing of composite samples of fresh concrete may include the following. Samples will be obtained and tested according to ASTM C 172/C 172M and the following:
1. Slump: ASTM C 143/C 143M.
2. Air Content: ASTM C 231/C 231M, pressure method, for normal-weight concrete.
3. Concrete Temperature: ASTM C 1064/C 1064M.
4. Compression Test Specimens: ASTM C 31/C 31M.
5. Compressive-Strength Tests: ASTM C 39/C 39M; one set of two field-cured specimens tested at 7 days and one set of two specimens at 28 days.
6. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength.
7. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 24 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. Floor and slab flatness and levelness will be measured according to ASTM E 1155 (ASTM E 1155M) within 48 hours of finishing.

E. Contractor shall notify testing and inspection agency at least 24 hours in advance of concrete construction work to receive testing and/or inspection.

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SECTION 087100 – DOOR HARDWARE

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. Mechanical and electrified door hardware for:

    a. Swinging doors.

2. The intent of the hardware specification is to specify the hardware for interior and exterior doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.

B. Exclusions: Unless specifically listed in hardware sets, hardware is not specified in this section for:

1. Windows
2. Cabinets (casework), including locks in cabinets
3. Signage
4. Toilet accessories
5. Overhead doors

C. Related Sections:

1. Division 01 Section "Alternates" for alternates affecting this section.
2. Division 07 Section "Joint Sealants" for sealant requirements applicable to threshold installation specified in this section.
3. Division 09 sections for touchup, finishing or refinishing of existing openings modified by this section.
4. Division 13 Section "Radiation Protection" for requirements for lead-lining for door hardware at openings indicated to receive radiation protection.
5. Division 26 sections for connections to electrical power system and for low-voltage wiring.
6. Division 28 sections for coordination with other components of electronic access control system.

1.03 REFERENCES

A. UL - Underwriters Laboratories

1. UL 10B - Fire Test of Door Assemblies
2. UL 10C - Positive Pressure Test of Fire Door Assemblies

3. UL 1784 - Air Leakage Tests of Door Assemblies
4. UL 305 - Panic Hardware

B. DHI - Door and Hardware Institute

1. Sequence and Format for the Hardware Schedule
2. Recommended Locations for Builders Hardware
3. Key Systems and Nomenclature

C. ANSI - American National Standards Institute

1. ANSI/BHMA A156.1 - A156.29, and ANSI/BHMA A156.31 - Standards for Hardware and Specialties

1.04 SUBMITTALS

A. General:

1. Submit in accordance with Conditions of Contract and Division 01 requirements.
2. Highlight, encircle, or otherwise specifically identify on submittals deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.
3. Prior to forwarding submittal, comply with procedures for verifying existing door and frame compatibility for new hardware, as specified in PART 3, “EXAMINATION” article, herein.

B. Action Submittals:

1. Product Data: Technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
2. Riser and Wiring Diagrams: After final approval of hardware schedule, submit details of electrified door hardware, indicating:

a. Wiring Diagrams: For power, signal, and control wiring and including:

1) Details of interface of electrified door hardware and building safety and security systems.
2) Schematic diagram of systems that interface with electrified door hardware.
3) Point-to-point wiring.
4) Risers.

3. Samples for Verification: If requested by Architect, submit production sample of requested door hardware unit in finish indicated, and tagged with full description for coordination with schedule.

a. Samples will be returned to supplier. Units that are acceptable to Architect may, after final check of operations, be incorporated into Work, within limitations of key coordination requirements.

4. Door Hardware Schedule: Submit schedule with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule as published by the Door and Hardware Institute. Indicate complete designations of each item required for each door or opening, include:

a. Door Index; include door number, heading number, and Architects hardware set number.

b. Opening Lock Function Spreadsheet: List locking device and function for each opening.
c. Quantity, type, style, function, size, and finish of each hardware item.
d. Name and manufacturer of each item.
e. Fastenings and other pertinent information.
f. Location of each hardware set cross-referenced to indications on Drawings.
g. Explanation of all abbreviations, symbols, and codes contained in schedule.
h. Mounting locations for hardware.
i. Door and frame sizes and materials.
j. Name and phone number for local manufacturer's representative for each product.
k. Operational Description of openings with any electrified hardware (locks, exits, electromagnetic locks, electric strikes, automatic operators, door position switches, magnetic holders or closer/holder units, and access control components). Operational description should include operational descriptions for: egress, ingress (access), and fire/smoke alarm connections.

1) Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work that is critical in Project construction schedule.

5. Key Schedule:

a. After Keying Conference, provide keying schedule listing levels of keying as well as explanation of key system's function, key symbols used and door numbers controlled.
b. Use ANSI/BHMA A156.28 “Recommended Practices for Keying Systems” as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
c. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations.
d. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.
e. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion.

1) Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.

f. Prepare key schedule by or under supervision of supplier, detailing Owner’s final keying instructions for locks.

6. Templates: After final approval of hardware schedule, provide templates for doors, frames and other work specified to be factory or shop prepared for door hardware installation.

C. Informational Submittals:

1. Qualification Data: For Supplier, Installer and Architectural Hardware Consultant.
2. Product data for electrified door hardware:

a. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.

3. Warranty: Special warranty specified in this Section.

D. Closeout Submittals:

1. Operations and Maintenance Data: Provide in accordance with Division 01 and include:

    a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
    b. Catalog pages for each product.
    c. Factory order acknowledgement numbers (for warranty and service)
    d. Name, address, and phone number of local representative for each manufacturer.
    e. Parts list for each product.
    f. Final approved hardware schedule, edited to reflect conditions as-installed.
    g. Final keying schedule
    h. Copies of floor plans with keying nomenclature
    i. As-installed wiring diagrams for each opening connected to power, both low voltage and 110 volts.
    j. Copy of warranties including appropriate reference numbers for manufacturers to identify project.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site.

B. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.

    1. Deliver each article of hardware in manufacturer’s original packaging.

C. Project Conditions:

    1. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.
    2. Provide secure lock-up for door hardware delivered to Project. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.

D. Protection and Damage:

    1. Promptly replace products damaged during shipping.
    2. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work.
    3. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.

1.06 COORDINATION

A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete.

B. Installation Templates: Distribute for doors, frames, and other work specified to be factory or shop prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

C. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.

D. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.

E. Existing Openings: Where existing doors, frames and/or hardware are to remain, field verify existing functions, conditions and preparations and coordinate to suit opening conditions and to provide proper door operation.

1.07 WARRANTY

A. Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Beginning from date of Substantial Completion, for durations indicated.

a. Closers:

1) Mechanical: 10 years
2) Electrified: 2 years.

b. Exit Devices:

1) Mechanical: Lifetime.
2) Electrified: 2 years.

c. Locksets:

1) Mechanical: Lifetime
Electrified: 1 year.

d. Continuous Hinges: Lifetime warranty.
e. Key Blanks: Lifetime

2. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. The Owner requires use of certain products for their unique characteristics and project suitability to insure continuity of existing and future performance and maintenance standards. After investigating available product offerings, the Awarding Authority has elected to prepare proprietary specifications. These products are specified with the notation: “No Substitute.”

1. Where “No Substitute” is noted, submittals and substitution requests for other products will not be considered.

B. Approval of manufacturers and/or products other than those listed as “Scheduled Manufacturer” or “Acceptable Manufacturers” in the individual article for the product category shall be in accordance with QUALITY ASSURANCE article, herein.

C. Approval of products from manufacturers indicated in “Acceptable Manufacturers” is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer’s product.

D. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

2.02 MATERIALS

A. Fasteners

1. Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation.
2. Furnish screws for installation with each hardware item. Finish exposed (exposed under any condition) screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.
3. Provide concealed fasteners for hardware units exposed when door is closed except when no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless thru-bolts are required to fasten hardware securely. Review door specification and advise Architect if thru-bolts are required.
4. Install hardware with fasteners provided by hardware manufacturer.

B. Modification and Preparation of Existing Doors: Where existing door hardware is indicated to be removed and reinstalled.

1. Provide necessary fillers, Dutchmen, reinforcements, and fasteners, compatible with existing materials, as required for mounting new opening hardware and to cover existing door and frame preparations.
2. Use materials which match materials of adjacent modified areas.
3. When modifying existing fire-rated openings, provide materials permitted by NFPA 80 as required to maintain fire-rating.

C. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.

1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.

2.03 HINGES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Hager BB Series.
2. Acceptable Manufacturers and Products: Ives 5BB, McKinney TA/T4A series, Stanley FBB Series.

B. Requirements:

1. Provide hinges conforming to ANSI/BHMA A156.1.

2. 1-3/4 inch thick doors, up to and including 36 inches (914 mm) wide:

   a. Exterior: Standard weight, bronze or stainless steel, 4-1/2 inches (114 mm) high
   b. Interior: Standard weight, steel, 4-1/2 inches (114 mm) high

3. 1-3/4 inch (44 mm) thick doors over 36 inches (914 mm) wide:

   a. Exterior: Heavy weight, bronze/stainless steel, 5 inches (127 mm) high
   b. Interior: Heavy weight, steel, 5 inches (127 mm) high

4. 2 inches or thicker doors:

   a. Exterior: Heavy weight, bronze or stainless steel, 5 inches (127 mm) high
   b. Interior: Heavy weight, steel, 5 inches (127 mm) high

5. Provide three hinges per door leaf for doors 90 inches (2286 mm) or less in height, and one additional hinge for each 30 inches (762 mm) of additional door height.

6. Where new hinges are specified for existing doors or existing frames, provide new hinges of identical size to hinge preparation present in existing door or existing frame.

7. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:

   a. Steel Hinges: Steel pins
   b. Non-Ferrous Hinges: Stainless steel pins
   c. Out-Swinging Exterior Doors: Non-removable pins
   d. Out-Swinging Interior Lockable Doors: Non-removable pins
   e. Interior Non-lockable Doors: Non-rising pins

8. Width of hinges: 4-1/2 inches (114 mm) at 1-3/4 inch (44 mm) thick doors, and 5 inches (127 mm) at 2 inches (51 mm) or thicker doors. Adjust hinge width as required for door, frame, and wall conditions to allow proper degree of opening.

9. Provide hinges with electrified options as scheduled in the hardware sets. Provide with sufficient number and wire gage to accommodate electric function of specified hardware. Locate electric hinge at second hinge from bottom or nearest to electrified locking component.

10. Provide mortar guard for each electrified hinge specified.

11. Provide spring hinges where specified. Provide two spring hinges and one bearing hinge per door leaf for doors 90 inches (2286 mm) or less in height. Provide one additional bearing hinge for each 30 inches (762 mm) of additional door height.

2.04 CONTINUOUS HINGES

A. Aluminum Geared

1. Manufacturers:

   a. Scheduled Manufacturer: Hager-Roton.
   b. Acceptable Manufacturers: No Substitute.

2. Requirements:

    a. Provide aluminum geared continuous hinges conforming to ANSI/BHMA A156.26, Grade 1.
    b. Provide aluminum geared continuous hinges, where specified in the hardware sets, fabricated from 6063-T6 aluminum.
    c. Provide split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation.
    d. Provide hinges capable of supporting door weights up to 450 pounds, and successfully tested for 1,500,000 cycles.
    e. On fire-rated doors, provide aluminum geared continuous hinges that are classified for use on rated doors by testing agency acceptable to authority having jurisdiction.
    f. Provide aluminum geared continuous hinges with electrified option scheduled in the hardware sets. Provide with sufficient number and wire gage to accommodate electric function of specified hardware.
    g. Install hinges with fasteners supplied by manufacturer.
    h. Provide hinges 1 inch (25 mm) shorter in length than nominal height of door, unless otherwise noted or door details require shorter length and with symmetrical hole pattern.

2.05 ELECTRIC POWER TRANSFER

A. Manufacturers:

    a. Scheduled Manufacturer: Marks PT Series.
    b. Acceptable Manufacturers: No Substitute.

B. Provide power transfer with electrified options as scheduled in the hardware sets. Provide with number and gage of wires sufficient to accommodate electric function of specified hardware.

C. Locate electric power transfer per manufacturer’s template and UL requirements, unless interference with operation of door or other hardware items.

2.06 CYLINDRICAL LOCKS – GRADE 1

A. Manufacturers and Products:

    1. Scheduled Manufacturer and Product: Marks 95 Series.
    2. Acceptable Manufacturers and Products: No Substitute

B. Requirements:

    1. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 1, and UL Listed for 3 hour fire doors.
    2. Cylinders: Refer to “KEYING” article, herein.
    3. Provide locks with standard 2-3/4 inches backset, unless noted otherwise, with 1/2 inch latch throw. Provide proper latch throw for UL listing at pairs.
    4. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
    5. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
    6. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
    7. Provide electrified options as scheduled in the hardware sets.
    8. Lever Trim: Solid cast levers without plastic inserts and wrought roses on both sides.

2.07 EXIT DEVICES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Marks M9900.
2. Acceptable Manufacturers and Products: No Substitute

B. Requirements:

1. Provide exit devices tested to ANSI/BHMA A156.3 Grade 1 and UL listed for Panic Exit or Fire Exit Hardware.
2. Cylinders: Refer to “KEYING” article, herein.
3. Provide touchpad type exit devices, fabricated of brass, bronze, stainless steel, or aluminum, plated to standard architectural finishes to match balance of door hardware.
4. Touchpad must extend a minimum of one half of door width. No plastic inserts are allowed in touchpads.
5. Provide exit devices with deadlatching feature for security and for future addition of alarm kits and/or other electrified requirements.
6. Provide flush end caps for exit devices.
7. Provide exit devices with manufacturer’s approved strikes.
8. Provide exit devices cut to door width and height. Install exit devices at height recommended by exit device manufacturer, allowable by governing building codes, and approved by Architect.
9. Mount mechanism case flush on face of doors, or provide spacers to fill gaps behind devices. Where glass trim or molding projects off face of door, provide glass bead kits.
10. Provide cylinder or hex-key dogging as specified at non fire-rated openings.
11. Removable Mullions: 2 inches (51 mm) x 3 inches (76 mm) steel tube. Where scheduled as keyed removable mullion, provide type that can be removed by use of a keyed cylinder, which is self-locking when re-installed.
12. Provide factory drilled weep holes for exit devices used in full exterior application, highly corrosive areas, and where noted in hardware sets.
13. Provide electrified options as scheduled.
14. Provide exit devices with optional trim designs to match other lever and pull designs used on the project.

2.08 POWER SUPPLIES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Marks.
2. Acceptable Manufacturers and Products: No Substitute.

B. Requirements:

1. Provide power supplies approved by manufacturer of supplied electrified hardware.
2. Provide appropriate quantity of power supplies necessary for proper operation of electrified locking components as recommended by manufacturer of electrified locking components with consideration for each electrified component using power supply, location of power supply, and approved wiring diagrams. Locate power supplies as directed by Architect.
3. Provide regulated and filtered 24 VDC power supply, and UL class 2 listed.
4. Provide power supplies with the following features:

    a. 12/24 VDC Output, field selectable.
    b. Class 2 Rated power limited output.
    c. Universal 120-240 VAC input.

d. Low voltage DC, regulated and filtered.
e. Polarized connector for distribution boards.
f. Fused primary input.
g. AC input and DC output monitoring circuit w/LED indicators.
h. Cover mounted AC Input indication.
i. Tested and certified to meet UL294.
j. NEMA 1 enclosure.
k. Hinged cover w/lock down screws.
l. High voltage protective cover.

2.09 CYLINDERS

A. Manufacturers:

1. Scheduled Manufacturer: Schlage

B. Requirements:

1. Provide cylinders/cores to match Owner’s existing key system, compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset, manufacturer’s series as indicated. Refer to “KEYING” article, herein.
2. Provide the following keyway: 1467

C. Construction Keying:

1. Replaceable Construction Cores.

a. Provide temporary construction cores replaceable by permanent cores, furnished in accordance with the following requirements.

1) 3 construction control keys
2) 12 construction change (day) keys.

b. Owner or Owner’s Representative will replace temporary construction cores with permanent cores.

2.10 KEYING

A. Provide cylinders/cores keyed into Owner’s existing factory registered keying system.

B. Comply with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.

C. Requirements:

1. Provide permanent cylinders/cores keyed by the manufacturer according to the following key system.

a. Master Keying system as directed by the Owner.

2. Forward bitting list and keys separately from cylinders, by means as directed by Owner. Failure to comply with forwarding requirements will be cause for replacement of cylinders/cores involved at no additional cost to Owner.
3. Quantity: Furnish in the following quantities.

    a. Change (Day) Keys: 3 per cylinder/core.
    b. Permanent Control Keys: 3.
    c. Master Keys: 6.

2.11 DOOR CLOSERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Stanley QDC Series.
2. Acceptable Manufacturers and Products: No Substitute

B. Requirements:

1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. ISO 9000 certify closers. Stamp units with date of manufacture code.
2. Provide door closers with fully hydraulic, full rack and pinion action with high strength cast iron cylinder, and full complement bearings at shaft.
3. Cylinder Body: 1-1/2 inch (38 mm) diameter with 5/8 inch (16 mm) diameter double heat-treated pinion journal.
4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck.
7. Provide closers with solid forged steel main arms and factory assembled heavy-duty forged forearms for parallel arm closers.
8. Pressure Relief Valve (PRV) Technology: Not permitted.
9. Finish for Closer Cylinders, Arms, Adapter Plates, and Metal Covers: Powder coating finish which has been certified to exceed 100 hours salt spray testing as described in ANSI Standard A156.4 and ASTM B117, or has special rust inhibitor (SRI).
10. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.12 DOOR TRIM

A. Manufacturers:

1. Scheduled Manufacturer: Don Jo.
2. Acceptable Manufacturers: Ives, Rockwood.

B. Requirements:

1. Provide push plates 4 inches (102 mm) wide by 16 inches (406 mm) high by 0.050 inch (1 mm) thick and beveled 4 edges. Where width of door stile prevents use of 4 inches (102 mm) wide plate, adjust width to fit.

2. Provide push bars of solid bar stock, diameter and length as scheduled. Provide push bars of sufficient length to span from center to center of each stile. Where required, mount back to back with pull.
3. Provide offset pulls of solid bar stock, diameter and length as scheduled. Where required, mount back to back with push bar.
4. Provide flush pulls as scheduled. Where required, provide back-to-back mounted model.
5. Provide pulls of solid bar stock, diameter and length as scheduled. Where required, mount back to back with push bar.
6. Provide pull plates 4 inches (102 mm) wide by 16 inches (406 mm) high by 0.050 inch (1 mm) thick, beveled 4 edges, and prepped for pull. Where width of door stile prevents use of 4 inches (102 mm) wide plate, adjust width to fit.
7. Provide wire pulls of solid bar stock, diameter and length as scheduled.
8. Provide decorative pulls as scheduled. Where required, mount back to back with pull.

2.13 PROTECTION PLATES

A. Manufacturers:

1. Scheduled Manufacturer: Rockwood
2. Acceptable Manufacturers: Ives.

B. Requirements:

1. Provide kick plates, mop plates, and armor plates minimum of 0.050 inch (1 mm) thick, beveled four edges as scheduled. Furnish with sheet metal or wood screws, finished to match plates.
2. Sizes of plates:

    a. Kick Plates: 10 inches (254 mm) high by 2 inches (51 mm) less width of door on single doors, 1 inch (25 mm) less width of door on pairs
    b. Mop Plates: 4 inches (102 mm) high by 2 inches (51 mm) less width of door on single doors, 1 inch (25 mm) less width of door on pairs
    c. Armor Plates: 36 inches (914 mm) high by 2 inches (51 mm) less width of door on single doors, 1 inch (25 mm) less width of door on pairs

2.14 DOOR STOPS AND HOLDERS

A. Manufacturers:

1. Scheduled Manufacturer: Ives.
2. Acceptable Manufacturers: Burns, Rockwood.

B. Provide door stops at each door leaf:

1. Provide wall stops wherever possible. Provide convex type where mortise type locks are used and concave type where cylindrical type locks are used.
2. Where a wall stop cannot be used, provide universal floor stops for low or high rise options.
3. Where wall or floor stop cannot be used, provide medium duty surface mounted overhead stop.

2.15 THRESHOLDS, SEALS, DOOR SWEEPS, AUTOMATIC DOOR BOTTOMS, AND GASKETING

A. Manufacturers:

1. Scheduled Manufacturer: Zero International.
2. Acceptable Manufacturers: National Guard, Reese.

B. Requirements:

1. Provide thresholds, weather-stripping (including door sweeps, seals, and astragals) and gasketing systems (including smoke, sound, and light) as specified and per architectural details. Match finish of other items.
2. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
3. Size of thresholds:

    a. Saddle Thresholds: 1/2 inch (13 mm) high by jamb width by door width
    b. Bumper Seal Thresholds: 1/2 inch (13 mm) high by 5 inches (127 mm) wide by door width

4. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.

2.16 SILENCERS

A. Manufacturers:

1. Scheduled Manufacturer: Ives.
2. Acceptable Manufacturers: Burns, Rockwood.

B. Requirements:

1. Provide "push-in" type silencers for hollow metal or wood frames.
2. Provide one silencer per 30 inches (762 mm) of height on each single frame, and two for each pair frame.
3. Omit where gasketing is specified.

2.17 MAGNETIC HOLDERS

A. Manufacturers:

1. Scheduled Manufacturer: LCN.
2. Acceptable Manufacturers: Rixson, Sargent.

B. Requirements:

1. Provide wall or floor mounted electromagnetic door release as specified with minimum of 25 pounds of holding force. Coordinate projection of holder and armature with other hardware and wall conditions to ensure that door sits parallel to wall when fully open. Connect magnetic holders on fire-rated doors into the fire control panel for fail-safe operation.

2.18 FINISHES

A. Finish: BHMA 626/652 (US26D); except:

1. Hinges at Exterior Doors: BHMA 630 (US32D)
2. Continuous Hinges: BHMA 630 (US32D)
3. Continuous Hinges: BHMA 628 (US28)
4. Push Plates, Pulls, and Push Bars: BHMA 630 (US32D)
5. Protection Plates: BHMA 630 (US32D)
6. Overhead Stops and Holders: BHMA 630 (US32D)
7. Door Closers: Powder Coat to Match
8. Wall Stops: BHMA 630 (US32D)
9. Latch Protectors: BHMA 630 (US32D)
10. Weatherstripping: Clear Anodized Aluminum
11. Thresholds: Mill Finish Aluminum

PART 3 - EXECUTION

3.01 EXAMINATION

A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Field verify existing doors and frames receiving new hardware and existing conditions receiving new openings. Verify that new hardware is compatible with existing door and frame preparation and existing conditions.

C. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
2. Custom Steel Doors and Frames: HMMA 831.
3. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."

B. Install each hardware item in compliance with manufacturer’s instructions and recommendations, using only fasteners provided by manufacturer.

C. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.

D. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.

E. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

F. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.

G. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

H. Intermediate Offset Pivots: Where offset pivots are indicated, provide intermediate offset pivots in quantities indicated in door hardware schedule but not fewer than one intermediate offset pivot per door and one additional intermediate offset pivot for every 30 inches of door height greater than 90 inches.

I. Lock Cylinders: Install construction cores to secure building and areas during construction period.

1. Furnish permanent cores to Owner for installation.

J. Door Closers: Mount closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.

K. Closer/Holders: Mount closer/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.

L. Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings or in equipment room, or alternate location as directed by Architect.

M. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

N. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.

O. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

P. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

Q. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.03 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.

3.04 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.05 DOOR HARDWARE SCHEDULE

A. Hardware items are referenced in the following hardware. Refer to the above-specifications for special features, options, cylinders/keying, and other requirements.

B. Hardware Sets:

HW SET: 01

Each to have:

6	EA	HINGE	BB1279 5" X 4.5"	626	HAG
2	EA	POWER TRANSFER	PT-5	689	MKS
1	EA	FIRE RATED REMOVABLE MULLION	KR9954XP STAB	689	VON
1	EA	FIRE RATED EXIT DEVICE	M9900F	US32D	MKS
1	EA	FIRE RATED ELEC. EXIT DEVICE	M9900F-ER	US32D	MKS
1	EA	PULL	MVPCC	US32D	MKS
1	EA	FSIC MORT HOUSING	20-059 (CAM AS REQ'D)	626	SCH
1	EA	FSIC RIM HOUSING	20-079	626	SCH
1	EA	FSIC CORE	23-030 1467	626	SCH
2	EA	CLOSER	QDC111 R	689	STA
2	EA	KICK PLATE	K1050 8" X 1" LDW	630	ROC
2	EA	FIRE/LIFE WALL MAG	SEM7850	689	LCN
2	EA	MEETING STILE	328AA-S	AA	ZER
1	EA	GASKETING	488SBK PSA	BK	ZER
1	EA	CREDENTIAL READER	BY DIV 28		B/O

DOOR NORMALLY CLOSED AND SECURE. ENTRY BY CARD READER OR KEY OVERRIDE. EGRESS AT ALL TIMES BY EXIT DEVICE. DOORS HELD OPEN ON MAGNETS. MAGNETS RELEASE AND DOORS CLOSE IMMEDIATELY UPON FIRE ALARM
FOR DOOR #'S 109B, 204A & 200C, TURNING LOCK DOWN KEY SWITCH (SEE HW SET # 02) WILL TEMPORARILY DE-ENERGIZE THE MAGNETS, DOORS WILL CLOSE, ONCE KEY IS REMOVED MAGNETS ARE RE-ENERGIZED AND DOORS CAN BE MANUALLY PLACED AGAINST THE MAGNETS FOR HOLD OPEN.

HW SET: 02

Each to have:

6	EA	HINGE	BB1279 5" X 4.5"	626	HAG
1	EA	FIRE RATED REMOVABLE MULLION	KR9954XP STAB	689	VON
2	EA	FIRE RATED EXIT DEVICE	M9900F	US32D	MKS
1	EA	PULL	MVPCC	US32D	MKS
1	EA	FSIC MORT HOUSING	20-059 (CAM AS REQ'D)	626	SCH
1	EA	FSIC RIM HOUSING	20-079	626	SCH
1	EA	FSIC CORE	23-030 1467	626	SCH
2	EA	CLOSER	QDC111 R	689	STA
2	EA	KICK PLATE	K1050 8" X 1" LDW	630	ROC
2	EA	FIRE/LIFE WALL MAG	SEM7850	689	LCN
2	EA	MEETING STILE	328AA-S	AA	ZER
1	EA	GASKETING	488SBK PSA	BK	ZER

DOORS HELD OPEN ON MAGNETS. MAGNETS RELEASE AND DOORS CLOSE IMMEDIATELY UPON FIRE ALARM

HW SET: 03
Each to have:

3	EA	HINGE	BB1279 4.5" X 4.5" NRP	626	HAG
1	EA	SERVICE STATION (F92)	195BS F19	US26D	MKS
1	EA	FSIC CORE	23-030 1467	626	SCH
1	EA	CLOSER	QDC111 R	689	STA
1	EA	KICK PLATE	K1050 8" X 2" LDW	630	ROC
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	SILENCER	SR64	GRY	IVE

HW SET: 04
Each to have:

3	EA	HINGE	BB1279 4.5" X 4.5" NRP	626	HAG
1	EA	STOREROOM (F86)	195F F19	US26D	MKS
1	EA	FSIC CORE	23-030 1467	626	SCH
1	EA	CLOSER	QDC111 R	689	STA
1	EA	KICK PLATE	K1050 8" X 2" LDW	630	ROC
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	SILENCER	SR64	GRY	IVE

HW SET: 05
Each to have:

3	EA	HINGE	BB1279 4.5" X 4.5" NRP	626	HAG
1	EA	STOREROOM (F86)	195F F19	US26D	MKS
1	EA	FSIC CORE	23-030 1467	626	SCH
1	EA	CLOSER	QDC113 R	689	STA
1	EA	KICK PLATE	K1050 8" X 2" LDW	630	ROC
1	EA	GASKETING	488SBK PSA	BK	ZER

HW SET: 06
Each to have:

3	EA	HINGE	BB1279 4.5" X 4.5" NRP	626	HAG
1	EA	INSTITUTION (F87)	195F F19	US26D	MKS
2	EA	FSIC CORE	23-030 1467	626	SCH
1	EA	CLOSER	QDC111 R	689	STA
1	EA	KICK PLATE	K1050 8" X 2" LDW	630	ROC
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	SILENCER	SR64	GRY	IVE

HW SET: 07
Each to have:

3	EA	HINGE	BB1279 4.5" X 4.5"	626	HAG
1	EA	CLASSROOM INTRUDER (F110)	195DB F19	US26D	MKS
1	EA	FSIC CORE	23-030 1467	626	SCH
1	EA	CLOSER	QDC111 R	689	STA
1	EA	KICK PLATE	K1050 8" X 2" LDW	630	ROC
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

HW SET: 08

Each to have:

3	EA	HINGE	BB1279 4.5" X 4.5"	626	HAG
1	EA	CLASSROOM INTRUDER (F110)	195DB F19	US26D	MKS
2	EA	FSIC CORE	23-030 1467	626	SCH
1	EA	CLOSER	QDC111 R	689	STA
1	EA	KICK PLATE	K1050 8" X 2" LDW	630	ROC
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 09

Each to have:

3	EA	HINGE	BB1279 4.5" X 4.5"	626	HAG
1	EA	PRIVACY	195FL	US26D	MKS
1	EA	CLOSER	QDC111 R	689	STA
1	EA	KICK PLATE	K1050 8" X 2" LDW	630	ROC
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

HW SET: 10

Each to have:

3	EA	HINGE	BB1279 4.5" X 4.5"	626	HAG
1	EA	PUSH PLATE	70	628	DON
1	EA	PULL PLATE	7015	628	DON
1	EA	CLOSER	QDC111 R	689	STA
1	EA	KICK PLATE	K1050 8" X 2" LDW	630	ROC
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 11

Each to have:

1	EA	CONT HINGE	780-053	CLR	ROT
1	EA	FIRE RATED EXIT DEVICE	M9900F	US32D	MKS
1	EA	EXIT TRIM	MESC600A	US32D	MKS
1	EA	FSIC MORT HOUSING	20-059 (CAM AS REQ'D)	626	SCH
1	EA	FSIC CORE	23-030 1467	626	SCH
1	EA	CLOSER	QDC113 R	689	STA
1	EA	KICK PLATE	K1050 8" X 2" LDW	630	ROC
1	EA	GASKETING	488SBK PSA	BK	ZER

HW SET: AL-01

Each to have:

2	EA	CONT HINGE	780-053	CLR	ROT
2	EA	POWER TRANSFER	PT-5	689	MKS
1	EA	REMOVABLE MULLION	KR4954B STAB	689	VON
1	EA	RIM EXIT DEVICE	M9900-M9901	US32D	MKS
1	EA	ELECTRIFIED EXIT DEVICE	M9900-M9901-ER	US32D	MKS
1	EA	PULL	MVP	US32D	MKS
1	EA	PULL	MVPCC	US32D	MKS
3	EA	FSIC MORT HOUSING	20-059 (CAM AS REQ'D)	626	SCH
1	EA	FSIC RIM HOUSING	20-079	626	SCH
4	EA	FSIC CORE	23-030 1467	626	SCH
2	EA	CLOSER	QDC113 R	689	STA
2	EA	BRACKETS /PLATES	AS REQ'D FOR MOUNTING CLOSER	689	STA
1	SET	MEETING STILE GASKET	BY DOOR ASSEMBLY MANUFACTURER		B/O
1	SET	PERIMETER GASKET	BY DOOR ASSEMBLY MANUFACTURER		B/O
1	EA	THRESHOLD	8655A (VFY. SILL CONDITION)	A	ZER
2	EA	DOOR SWEEP	BY ASSEMBLY MANUFACTURER		B/O
1	EA	CREDENTIAL READER	BY DIV 28		B/O
1	EA	POWER SUPPLY	602C		MKS

DOOR NORMALLY CLOSED AND SECURE. ENTRY BY CARD READER OR KEY OVERRIDE. EGRESS AT ALL TIMES BY EXIT DEVICE. DOORS CAN BE DOGGED BY KEY FOR HIGH TRAFFIC PARTS OF THE DAY THEN UN-DOGGED AND ENTRY BY CREDENTIAL ONLY.

HW SET: AL-02: Each to have:

6	EA	PIVOT	BY DOOR MANUFACTURER			TGP
2	EA	POWER TRANSFER	EPTL	✓	689	MIS
2	EA	ELEC FIRE EXIT HARDWARE	RX-QEL-3547A-L-F-LBR-06 24 VDC	✓	626	VON
2	EA	FSIC MORT HOUSING	20-059 (CAM AS REQ'D)		626	SCH
1	EA	FSIC CORE	23-030 1467		626	SCH
2	EA	SURFACE CLOSER	4040XP RW/PA		689	LCN
1	SET	PERIMETER GASKET	BY DOOR ASSEMBLY MANUFACTURER			B/O
2	EA	DOOR BOTTOM	420APKL		689	PEM
1	EA	CREDENTIAL READER	BY DIV 28			B/O
1	EA	POWER SUPPLY	PS902 120/240 VAC	✓		VON
1	EA	CONT HINGE	780-053		CLR	ROT
1	EA	POWER TRANSFER	PT-5		689	MKS
1	EA	FIRE RATED ELEC. EXIT DEVICE	M9900F-ER		US32D	MKS
1	EA	EXIT TRIM	MESC600A		US32D	MKS
1	EA	FSIC MORT HOUSING	20-059 (CAM AS REQ'D)		626	SCH
1	EA	FSIC CORE	23-030 1467		626	SCH
1	EA	CLOSER	QDC113 R		689	STA
1	EA	BRACKETS /PLATES	AS REQ'D FOR MOUNTING CLOSER		689	STA
1	SET	PERIMETER GASKET	BY DOOR ASSEMBLY MANUFACTURER			B/O
1	EA	CREDENTIAL READER	BY DIV 28			B/O

HW SET: AL-03: Each to have:

2	EA	CONT HINGE	780-053	CLR	ROT
1	EA	REMOVABLE MULLION	KR4954B STAB	689	VON
2	EA	RIM EXIT DEVICE	M9900-M9901	US32D	MKS
2	EA	PULL	MVP	US32D	MKS
1	EA	FSIC MORT HOUSING	20-059 (CAM AS REQ'D)	626	SCH
1	EA	FSIC CORE	23-030 1467	626	SCH
2	EA	CLOSER	QDC113 R	689	STA
2	EA	BRACKETS /PLATES	AS REQ'D FOR MOUNTING CLOSER	689	STA
1	SET	MEETING STILE GASKET	BY DOOR ASSEMBLY MANUFACTURER		B/O
1	SET	PERIMETER GASKET	BY DOOR ASSEMBLY MANUFACTURER		B/O
1	EA	THRESHOLD	8655A (VFY. SILL CONDITION)	A	ZER
2	EA	DOOR SWEEP	BY ASSEMBLY MANUFACTURER		B/O

HW SET: AL-04
Each to have:

1	EA	CONT HINGE	780-053	CLR	ROT
1	EA	RIM EXIT DEVICE	M9900-M9901	US32D	MKS
1	EA	PULL	MVP	US32D	MKS
1	EA	CLOSER	QDC115 R	689	STA
1	EA	FLOOR STOP	FS18S	BLK	IVE

HW SET: AL-05
For use on Door #(s):
100C
Each to have:

6	EA	PIVOT	BY DOOR MANUFACTURER		TGP
2	EA	FIRE EXIT HARDWARE	3547A-L-F-LBR-06	626	VON
2	EA	FSIC MORT HOUSING	20-059 (CAM AS REQ'D)	626	SCH
2	EA	FSIC CORE	23-030 1467	626	SCH
2	EA	SURFACE CLOSER	4040XP RW/PA	689	LCN
1	SET	PERIMETER GASKET	BY DOOR ASSEMBLY MANUFACTURER		B/O
2	EA	DOOR BOTTOM	420APKL	689	PEM

HW SET: AL-06
Each to have:

1	EA	CONT HINGE	780-053	CLR	ROT
1	EA	FIRE RATED EXIT DEVICE	M9900F	US32D	MKS
1	EA	EXIT TRIM	MESC600A	US32D	MKS
1	EA	FSIC MORT HOUSING	20-059 (CAM AS REQ'D)	626	SCH
1	EA	FSIC CORE	23-030 1467	626	SCH
1	EA	CLOSER	QDC113 R	689	STA
1	SET	PERIMETER GASKET	BY DOOR ASSEMBLY MANUFACTURER		B/O

HW SET: AL-07
Each to have:

2	EA	CONT HINGE	780-053	CLR	ROT
2	EA	PUSH/PULL BAR	9190HD-10"-NO	630	IVE
2	EA	CLOSER	QDC115 R	689	STA
2	EA	BRACKETS /PLATES	AS REQ'D FOR MOUNTING CLOSER	689	STA
2	EA	FLOOR STOP	FS18S	BLK	IVE
1	SET	MEETING STILE GASKET	BY DOOR ASSEMBLY MANUFACTURER		B/O
1	SET	PERIMETER GASKET	BY DOOR ASSEMBLY MANUFACTURER		B/O

HW SET: AL-08
Each to have:

2	EA	CONT HINGE	780-053	CLR	ROT
2	EA	PUSH/PULL BAR	9190HD-10"-NO	630	IVE
2	EA	CLOSER	QDC113 R	689	STA
2	EA	BRACKETS /PLATES	AS REQ'D FOR MOUNTING CLOSER	689	STA
1	SET	MEETING STILE GASKET	BY DOOR ASSEMBLY MANUFACTURER		B/O
1	SET	PERIMETER GASKET	BY DOOR ASSEMBLY MANUFACTURER		B/O

HW SET: AL-09

Each to have:

2	EA	CONT HINGE	780-053	CLR	ROT
2	EA	PUSH/PULL BAR	9190HD-10"-NO	630	IVE
1	EA	CLOSER	QDC113 R	689	STA
1	EA	CLOSER	QDC115 R	689	STA
2	EA	BRACKETS /PLATES	AS REQ'D FOR MOUNTING CLOSER	689	STA
1	EA	FLOOR STOP	FS18S	BLK	IVE
1	SET	MEETING STILE GASKET	BY DOOR ASSEMBLY MANUFACTURER		B/O
1	SET	PERIMETER GASKET	BY DOOR ASSEMBLY MANUFACTURER		B/O

HW SET: AL-10

Each to have:

1	EA	CONT HINGE	780-053	CLR	ROT
1	EA	PUSH/PULL BAR	9190HD-10"-NO	630	IVE
1	EA	CLOSER	QDC115 R	689	STA
1	EA	FLOOR STOP	FS18S	BLK	IVE
1	SET	PERIMETER GASKET	BY DOOR ASSEMBLY MANUFACTURER		B/O

HW SET: AL-11

Each to have:

1	EA	CONT HINGE	780-053	CLR	ROT
1	EA	SERVICE STATION (F92)	195BS F19	US26D	MKS
1	EA	FSIC CORE	23-030 1467	626	SCH
1	EA	CLOSER	QDC111 R	689	STA
1	EA	BRACKETS /PLATES	AS REQ'D FOR MOUNTING CLOSER	689	STA
1	EA	FLOOR STOP	FS439	630	IVE
1	SET	PERIMETER GASKET	BY DOOR ASSEMBLY MANUFACTURER		B/O

END OF SECTION

SECTION 092216 - NON-STRUCTURAL METAL FRAMING

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. Non-load-bearing steel framing systems for interior partitions.
2. Suspension systems for interior ceilings and soffits.

B. Related Requirements:

1. Section 012300 “Alternates” for Alternates that affect the scope of Work of this Section.
2. Section 061053 “Miscellaneous Rough Carpentry” for blocking installed frame walls.
3. Section 072100 “Thermal Insulation” for sound attenuation blankets.
4. Section 078443 “Joint Firestopping.”
5. Section 079200 “Joint Sealers”
6. Section 081113 “Hollow Metal Doors”
7. Section 083113 “Access Doors and Frames.”
8. Section 092900 “Gypsum Board.”

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of code-compliance certification for studs and tracks.

B. Evaluation reports for post-installed anchors and power-actuated fasteners.

1.5 QUALITY ASSURANCE

A. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Certified Steel Stud Association the Steel Framing Industry Association or the Steel Stud Manufacturers Association.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated on Drawings, according to ASTM E90 and classified according to ASTM E413 by an independent testing agency.

2.2 FRAMING SYSTEMS

A. Steel Stud and Runners: ASTM C645. User steel studs and runners. Dimpled steel studs and runner are not acceptable.

1. Minimum Base-Steel Thickness: As indicated on Drawings 0.0329 inch.
2. Depth: As indicated on Drawings.

B. Slip-Type Head Joints: Where indicated, provide one of the following in thickness not less than indicated for studs and in width to accommodate depth of studs:

1. Single Long-Leg Track System: ASTM C645 top track with 2-inch-deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top track and with continuous bridging located within 12 inches of the top of studs to provide lateral bracing.
2. Double-Track System: ASTM C645 top outer tracks, inside track with 2-inch-deep flanges in thickness not less than indicated for studs and fastened to studs, and outer track sized to friction-fit over inner track.
3. Deflection Track: Steel sheet top track manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.

a. Products: Subject to compliance with requirements, provide one of the following:

1) ClarkDietrich Building Systems; SLP-TRK Slotted Deflection Track.
2) MBA Building Supplies; FlatSteel Deflection Track or Slotted Deflecto Track.
3) Steel Network Inc. (The); VertiClip SLD or VertiTrack VTD Series.
4) Superior Metal Trim; Superior Flex Track System (SFT).
5) Telling Industries; Vertical Slip Track or Vertical Slip Track II.

C. Flat Strap and Backing Plate: Minimum uncoated-steel thickness 0.033-inch steel sheet for blocking and bracing in length and width indicated.

D. Cold-Rolled Channel Bridging: Steel, 0.053-inch uncoated-steel thickness, 1-1/2-inch-deep unless indicated otherwise on drawings, with minimum 1/2-inch-wide flanges.

1. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch-thick, galvanized steel.

E. Hat-Shaped, Rigid Furring Channels: ASTM C645, 0.033 inch uncoated-steel thickness, 7/8 inch unless indicated otherwise on drawings.

F. Resilient Furring Channels: 1/2-inch-deep, steel sheet members designed to reduce sound transmission.

1. Configuration: Asymmetrical or hat shaped.

G. Cold-Rolled Furring Channels: 0.053-inch uncoated-steel thickness, with minimum 1/2-inch-wide flanges.

1. Depth: 3/4 inch.
2. Furring Brackets: Adjustable, corrugated-edge-type steel sheet with minimum uncoated-steel thickness of 0.0329 inch.
3. Tie Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.062-inch-diameter wire, or double strand of 0.048-inch-diameter wire.

H. Resilient Furring Channels at Wall Assemblies that include Resilient Sound Isolation Clips: 7/8-inch-deep members designed to reduce sound transmission.

1. Configuration: Hat shaped.

2.3 SUSPENSION SYSTEMS

A. Tie Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.062-inch-diameter wire, or double strand of 0.048-inch-diameter wire.

B. Hanger Attachments to Concrete:

1. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01 or AC58 as appropriate for the substrate.

a. Uses: Securing hangers to structure.
b. Type: Torque-controlled, expansion anchor, torque-controlled, adhesive anchor, or adhesive anchor.
c. 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.

C. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.16 inch in diameter.

D. Carrying Channels (Main Runners): Cold-rolled, commercial-steel sheet with a base-metal thickness of 0.0538 inch and minimum 1/2-inch-wide flanges.

1. Depth: 2 inches.

E. Furring Channels (Furring Members):

1. Cold-Rolled Channels: 0.0538-inch uncoated-steel thickness, with minimum 1/2-inch-wide flanges, 3/4 inch deep.
2. Steel Studs and Tracks: ASTM C 645.

a. Minimum Base-Metal Thickness: 0.0329 inch.
b. Depth: 2-1/2 inches.

3. Hat-Shaped, Rigid Furring Channels: ASTM C 645, 7/8 inch deep.

a. Minimum Base-Metal Thickness: 0.0329 inch.

4. Resilient Furring Channels: 1/2-inch-deep members designed to reduce sound transmission.

a. Configuration: Asymmetrical or hat shaped.

2.4 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Installation Standard: ASTM C754.

1. Gypsum Board Assemblies: Also comply with requirements in ASTM C840 that apply to framing installation.

B. Install framing and accessories plumb, square, and true to line, with connections securely fastened.

C. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.

D. Install bracing at terminations in assemblies.

E. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.2 INSTALLING FRAMED ASSEMBLIES

A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.

B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.

C. Install studs so flanges within framing system point in same direction.

D. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts that penetrate partitions above ceiling.

1. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install track section (for cripple studs) at head and secure to jamb studs.

a. Install two studs at each jamb unless otherwise indicated.
b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.

c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.

2. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
3. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.

a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.

4. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.

E. Direct Furring:

1. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.

F. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.3 INSTALLING CEILING SUSPENSION SYSTEMS

A. Install suspension system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.

B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.

C. Suspend hangers from building structure as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.

a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.

a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.

3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
4. Flat Hangers: Secure to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices and fasteners that are secure and appropriate for structure and hanger, and in a manner that will not cause hangers to deteriorate or otherwise fail.

5. Do not attach hangers to steel roof deck.
6. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
7. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
8. Do not connect or suspend steel framing from ducts, pipes, or conduit.

D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.

E. Seismic Bracing: Sway-brace suspension systems with hangers used for support.

F. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION 092216

SECTION 092900 - GYPSUM BOARD

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. Interior gypsum board.

B. Related Requirements:

1. Section 061053 “Rough Carpentry” for wood framing supporting interior gypsum board.
2. Section 061600 “Sheathing” for wood wall and parapet sheathing and for exterior glass-mat gypsum sheathing.
3. Section 072100 “Thermal Insulation” for glass-fiber blankets, unfaced, used as sound attenuation blanket insulation.
4. Division 07 Sections “Acoustical Joint Sealants” and “Joint Sealants.”
5. Section 092216 “Non-Structural Metal Framing” for suspension systems for gypsum board ceilings.
6. Division 09 Section “Wall Coverings” for priming of gypsum board surfaces to receive wall coverings.
7. Section 099123 “Interior Painting” for primers, intermediate coats, and topcoats applied to gypsum wallboard.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each texture finish indicated on same backing indicated for Work.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E90 and classified according to ASTM E413 by an independent testing agency.

2.2 GYPSUM BOARD, GENERAL

A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

A. Gypsum Board, Type X: ASTM C1396/C1396M.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. American Gypsum.
    b. CertainTeed Corporation.
    c. Continental Building Products, LLC.
    d. Georgia-Pacific Gypsum LLC.
    e. National Gypsum Company.
    f. PABCO Gypsum.
    g. USG Corporation.

2. Thickness: 5/8 inch.
3. Long Edges: Tapered.

B. Gypsum Ceiling Board: ASTM C1396/C1396M.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. American Gypsum.
    b. CertainTeed Corporation.
    c. Continental Building Products, LLC.
    d. Georgia-Pacific Gypsum LLC.
    e. National Gypsum Company.
    f. PABCO Gypsum.
    g. USG Corporation.

2. Thickness: 1/2 inch.
3. Long Edges: Tapered.

C. Impact-Resistant Gypsum Board: ASTM C1396/C1396M gypsum board, tested according to ASTM C1629/C1629M.

1. Provide impact resistant gypsum wallboard to 8’-0” above finish floor.

2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. American Gypsum.
    b. CertainTeed Corporation.
    c. Continental Building Products, LLC.
    d. Georgia-Pacific Gypsum LLC.
    e. National Gypsum Company.
    f. PABCO Gypsum.

g. USG Corporation.

3. Core: 5/8 inch, Type X.
4. Surface Abrasion: ASTM C1629/C1629M, meets or exceeds Level 2 requirements.
5. Indentation: ASTM C1629/C1629M, meets or exceeds Level 2 requirements.
6. Soft-Body Impact: ASTM C1629/C1629M, meets or exceeds Level 2 requirements.
7. Hard-Body Impact: ASTM C1629/C1629M, meets or exceeds Level 2 requirements according to test in Annex A1.
8. Long Edges: Tapered.
9. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

D. Mold-Resistant Gypsum Board: ASTM C1396/C1396M. With moisture- and mold-resistant core and paper surfaces.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. American Gypsum.
b. CertainTeed Corporation.
c. Continental Building Products, LLC.
d. Georgia-Pacific Gypsum LLC.
e. National Gypsum Company.
f. PABCO Gypsum.
g. USG Corporation.

2. Core: 5/8 inch, Type X.
3. Long Edges: Tapered.
4. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

E. Moisture And Mold Resistant Type X Gypsum Board.

1. Basis of Design: Subject to compliance with project requirements, the design is based on the following: United States Gypsum Company, LLC, “USG Sheetrock® Brand Mold Tough® Ultracode® Core Panels (UL Type ULTRACODE)”
2. Core: 3/4” Type X
3. Long Edges: Tapered.
4. Mold Resistance: ASTM D3273. Meet or exceed ASTM C 1396 specifications.

2.4 TRIM ACCESSORIES

A. Interior Trim: ASTM C1047.

1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
2. Shapes:

a. Cornerbead.
b. Bullnose bead.
c. LC-Bead: J-shaped; exposed long flange receives joint compound.
d. L-Bead: L-shaped; exposed long flange receives joint compound.
e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
f. Expansion (control) joint.
g. Curved-Edge Cornerbead: With notched or flexible flanges.

2.5 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C475/C475M.

B. Joint Tape:

1. Interior Gypsum Board: Paper.
2. Tile Backing Panels: As recommended by panel manufacturer.

C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.

    a. Use setting-type compound for installing paper-faced metal trim accessories.

3. Fill Coat: For second coat, use drying-type, all-purpose compound.
4. Finish Coat: For third coat, use drying-type, all-purpose compound.
5. Skim Coat: For final coat of Level 5 finish, use high-build interior coating product designed for application by airless sprayer and to be used instead of skim coat to produce Level 5 finish.
6. Available manufacturers offering precuts that may be incorporated into the Work, include, but are not limited to the following:

    a. CertainTeed Corp.; “ProRoc Level V Wall and Ceiling Primer/Surfacer.”
    b. USG Corporation; “Sheetrock Brand Tuff-Hide Primer-Surfacer.”

2.6 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.

B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

C. Steel Drill Screws: ASTM C1002 unless otherwise indicated.

1. Use screws complying with ASTM C954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

D. Sound-Attenuation Blankets: ASTM C665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.

1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.

E. Thermal Insulation: As specified in Section 072100 "Thermal Insulation."

PART 3 - EXECUTION

3.1 APPLYING AND FINISHING PANELS

A. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

B. Comply with ASTM C840.

C. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch-wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

D. For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

E. Prefill open joints, rounded or beveled edges, and damaged surface areas.

F. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

G. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C840:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 2: Panels that are substrate for tile.
3. Level 3: Panels that are substrate for wall coverings.
4. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.

    a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."

3.2 PROTECTION

A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

B. Remove and replace panels that are wet, moisture damaged, and mold damaged.

END OF SECTION 092900

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PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For resilient floor tile, as determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.

1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

2.2 LUXURY VINYL FLOOR TILE **LVT-#**

A. Quartz Vinyl Tile: Subject to compliance with requirements, provide Patcraft “CMYK” Collection Luxury Vinyl Tile:

1. Tile Standard: ASTM F 1066, Class 2, through pattern.

a. Wearing Surface: 20 MIL.
b. Thickness: 0.098-inch (2.5mm.
c. Size: 12 by 24-inches.
d. Colors and Patterns:

1) **LVT-1**: Pattern I426V, color 00530 Smoke as **Field Color**.
2) **LVT-2**: Pattern I426V, color 00450 Sapphire as Accent #1.
3) **LVT-3**: Pattern I426V, color 00850 Roma as Accent #2.
4) **LVT-4**: Pattern I426V, color 00560 Shade as Accent #3.

B. Adhesive: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.

2.3 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.

B. Topically-Applied Concrete Moisture Vapor and pH Control System for Concrete Slabs: Provide synthetic polymer formulation is made specifically for concrete moisture and alkalinity control applications on-grade, above or below-grade and meets or exceeds performance expectations of the new ASTM F-3010 standard.

1. Basis-of-Design Product: Provide Vapor-Green FC, as manufactured by Advanced Moisture Control, Inc., over properly-prepared and profiled concrete slab surfaces, or comparable product, by one of the following manufacturers, that is compatible with the adhesive and resilient flooring, with written approval of Owner and Architect in an addendum published prior to bidding:

1) Creteseal.
2) Floorseal Technology.
3) Vexcon Chemicals.

SECTION 122413 - ROLLER WINDOW SHADES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes manually-operated sunscreen roller shades.

B. Related Sections:

1. Division 06 Section “Miscellaneous Rough Carpentry” for backing and blocking in frame walls.
2. Division 08 Section “Aluminum-Framed Entrances and Storefronts” for glazing systems.
3. Division 09 Sections “Non-Structural Metal Framing” and “Gypsum Board” for furred frame walls.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Include plans, elevations, sections, details, details of installation, operational clearances, and relationship to adjoining Work.

1. Verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings.

C. Coordination Drawings: Drawn to scale and coordinating penetrations and ceiling-mounted items.

D. Samples: For each exposed finish and for each color and texture required.

E. Window Treatment Schedule: Use same designations indicated on Drawings.

F. Sample Warranty.

G. Maintenance data.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Firm which is approved by the manufacturer/fabricator of roller shades in writing.

B. Fire-Test-Response Characteristics: Provide products passing flame-resistance testing according to NFPA 701 by a testing agency acceptable to authorities having jurisdiction.

C. Anti-Microbial Characteristics: 'No Growth' per ASTM G 21 results for fungi ATCC9642, ATCC 9644, ATCC9645.

D. Comply with WCMA A 100.1.

E. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

F. Warranty: Provide manufacturer's standard warranty for materials and installation.

1. Warranty Period: One year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 ROLLER SHADES

A. Basis-of-Design Product: Manufacturer: Draper; Product: Clutch Operated Flexshade or a comparable product by one of the following manufacturers, with prior approval of Architect:

1. Hunter Douglas, Inc.; Hunter Douglas Window Fashions Division.
2. Lutron Shading Solutions by VIMCO.
3. MechoShade Systems, Inch.

B. Shade cloth Material **WC**:

1. Shade cloth (Typical) **WC:** Woven shade cloth in a 1x2 basket-weave pattern.

a. Content: 78% vinyl, 22% polyester core.
b. Material Openness Factor: 3 percent.
c. Width: As required at each location.
d. Pattern/Color: Match ThermoVeil #1519, Silver Birch.

C. Rollers: Electrogalvanized or epoxy primed steel or extruded-aluminum tube of diameter and wall thickness required to support and fit internal components of operating system and the weight and width of shade band material without sagging; designed to be easily removable from support brackets. Provide capacity for one roller shade band(s) per roller.

D. Direction of Roll: Regular, from back of roller.

E. Mounting Brackets: Fascia end caps, fabricated from steel finished to match fascia or headbox.

F. Fascia: L-shaped, formed-steel sheet or extruded aluminum; long edges returned or rolled; continuous panel concealing front and bottom of shade roller, brackets, and operating hardware and operators; removable design for access.

1. Color: Clear anodized aluminum.

G. Bottom Bar: Steel or extruded aluminum. Provide concealed, by pocket of shade material, internal type.

H. Mounting: Inside jamb.

I. Shade Operation: Manual; with continuous-loop bead-chain, clutch, and cord tensioner and bracket lift operator.

2.2 ROLLER SHADE FABRICATION

A. Unit Sizes: Obtain units fabricated in sizes to fill window and other openings as follows, measured at 74 deg F:

1. Shade Units Installed between (Inside) Jambs: Edge of shade not more than 1/4 inch from face of jamb. Length equal to head to sill dimension of opening in which each shade is installed.
2. Size rollers, brackets and trim to accommodate opening sizes and shade cloth weights.
3. Provide manufacturer’s lift-assist mechanisms where required based on unit sizes and weights.

B. Installation Brackets: Designed for easy removal and reinstallation of shade, for supporting fascia, headbox, roller, and operating hardware and for hardware position and shade mounting method indicated.

C. Installation Fasteners: No fewer than two fasteners per bracket, fabricated from metal noncorrosive to shade hardware and adjoining construction; type designed for securing to supporting substrate; and supporting shades and accessories under conditions of normal use. EXECUTION

2.3 ROLLER SHADE INSTALLATION

A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions, and located so shade band is not closer than 2-inches to interior face of glass. Allow clearances for window operation hardware.

B. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

C. Clean roller shade surfaces after installation, according to manufacturer's written instructions.

2.4 ROLLER SHADE SCHEDULE

A. Install roller window shades **WC** in all exterior windows in the following locations:

1. Level 1: Student Council 104, TYP Classroom 105, Engineering 106, Engineering Lab 109, TYP Classrooms 111, 112, 113, 114 and Faculty Prep 115.
2. Level 2: TYP Classrooms 203, 204, 205, 206, 207, 208, 209, 210, and Conference 211.

END OF SECTION 122413

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SECTION 142400 - HYDRAULIC ELEVATORS

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 hydraulic passenger elevators.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for temporary use of elevators for construction purposes.
2. Section 033000 "Cast-in-Place Concrete" for setting sleeves, inserts, and anchoring devices in concrete.
3. Section 051200 "Structural Steel Framing" for the following:

    a. Attachment plates, angle brackets, and other structural-steel preparations for fastening guide-rail brackets.
    b. Divider beams.
    c. Hoist beams.
    d. Structural-steel shapes for subsills that are part of steel frame.

4. Section 055000 "Metal Fabrications" for the following:

    a. Attachment plates and angle brackets for supporting guide-rail brackets.
    b. Elevator pit sump covers.
    c. Pit ladders.

1. Section 095516 “Resilient Sheet Flooring” for finish flooring in elevator cars.
2. Section 092116.23 “Gypsum Board Shaft Wall Assemblies” for elevator shafts.
3. Division 27 "Communications" Sections for telephone service for elevators and for Internet connection to elevator controllers for remote monitoring of elevator performance if required.
4. Division 28 "Fire-Alarm" Sections for smoke detectors in elevator lobbies to initiate emergency recall operation and heat detectors in shafts and machine rooms to disconnect power from elevator equipment before sprinkler activation and for connection to elevator controllers.

1.3 DEFINITIONS

A. Definitions in ASME A17.1/CSA B44 apply to work of this Section.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Convene multiple pre-installation meetings and site visits before start of installation of elevators. Provide a pre-installation checklist clearly identifying all required work prior to installation start.
2. Convene pre-installation meeting before start of installation of elevators.
3. Require attendance of parties directly affecting work of this section, including Contractor, Architect, and elevator manufacturer/installer.
4. Review examination, installation, field quality control, adjusting, cleaning, protection, and coordination with other work.

1.5 ACTION SUBMITTALS

A. Product Data: Submit manufacturer/installer's product data, including:

1. Descriptive brochures or detail drawings of car and hall fixtures, cab ceilings, and product features.
2. Power Information: Separate data sheets for horsepower, starting current, running current, machine and control heat release, and electrical requirements.

B. Shop Drawings:

1. Include plans, elevations, sections, and large-scale details indicating service at each landing, coordination with building structure, relationships with other construction, and locations of equipment.
2. Include plans, elevations, sections, and large-scale details indicating service at each landing; machine room layout; coordination with building structure; relationships with other construction; and locations of equipment.
3. Indicate maximum dynamic and static loads imposed on building structure at points of support as well as maximum and average power demands.

C. Samples: Submit manufacturer/installer's samples of standard colors and finishes of finish materials for each type of exposed finish involving color selection.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Seismic Qualification Certificates: For elevator equipment, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

C. Manufacturer Certificates: Signed by elevator manufacturer, certifying that hoistway, pit, and machine room layout and dimensions, as shown on Drawings, and electrical service including standby-power generator, as shown and specified, are adequate for elevator system being provided.

D. Sample Warranty: For manufacturer/installer's standard warranty.

1.7 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For elevators to include in emergency, operation, and maintenance manuals.

1. Submit manufacturer's/installer's standard operation and maintenance manual, in accordance with ASME A17.1/CSA B44 including diagnostic and repair information available to manufacturer's and Installer's maintenance personnel.

B. Inspection and Acceptance Certificates and Operating Permits: As required by authorities having jurisdiction for normal, unrestricted elevator use.

C. Continuing Maintenance Proposal: Submit a continuing maintenance proposal from Installer to Owner, in the form of a standard five-year maintenance agreement, starting on date initial maintenance service is concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: Elevator manufacturer.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle materials, components and equipment in manufacturer's protective packaging. Store materials, components, and equipment off of ground, under cover, and in a dry location.

1.10 FIELD CONDITIONS

A. Temporary Electrical Power: Comply with Section 015000 “Temporary Facilities and Controls.”

B. Temporary Work Platform: Provide temporary work platform at the top floor of the hoistway, compliant with applicable codes and according to the layout drawing specification. Erection, maintenance, and removal will be done by others.

C. Temporary Use of Elevator: Comply with Section 015000 “Temporary Facilities and Controls.”

1.11 COORDINATION

A. Coordinate installation of sleeves, block outs, elevator equipment with integral anchors, and other items that are embedded in concrete or masonry for elevator equipment. Furnish templates, sleeves, elevator equipment with integral anchors, and installation instructions and deliver to Project site in time for installation.

B. Coordinate locations and dimensions of other work specified in other Sections that relates to hydraulic elevators, including pit ladders; sumps and floor drains in pits; entrance subsills; electrical service; and electrical outlets, lights, and switches in hoistways, pits, and machine rooms.

1.12 WARRANTY

A. Manufacturer/installer shall guarantee materials and workmanship of equipment installed under these specifications and make good, defects not due to ordinary wear or to improper use, which may develop within 1 year after completion of installation or acceptance thereof by beneficial use, whichever is earlier.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: The Drawings are based on Endura 3500 HMRL Hydraulic Elevator as manufactured by ThyssenKrupp Elevator. Website www.thyssenkrupppelevator.com.

B. Subject to compliance with requirements comparable products by the following may be incorporated into the work, on with written approval of Architect in an Addendum published prior to Bidding:

1. Kone Inc.; Monospace. Website www.kone.us.com .
2. Otis Elevator Co.; Gen2. Website www.otis.com .
3. Schindler Elevator Corp.; Series 330A Holeless Hydraulic. Website www.us.schindler.com .

C. Source Limitations: Obtain elevators, including machine roomless electric traction passenger elevators specified in other Sections, from single manufacturer.

1. Major elevator components, including pump-and-tank units, plunger-cylinder assemblies, controllers, signal fixtures, door operators, car frames, cars, and entrances, shall be manufactured by single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements:

1. Elevator design, clearances, construction, workmanship, materials, and installation, unless specified otherwise, shall be in accordance with ANSI/ASME A17.1, handicap accessibility, Americans with Disabilities Act, and other codes having legal jurisdiction.
2. ANSI/ASME A17.1 shall govern, except where codes having legal jurisdiction include more rigid requirements or conflict with ANSI/ASME A17.1.
3. Elevator shall follow design and manufacturing procedures certified in accordance with ISO 9001-2000 to meet product and service requirements for quality assurance for new products.

B. Accessibility Requirements: Comply with requirements for accessible elevators in the United States Access Board's ADA-ABA Accessibility Guidelines and with ICC A117.1.

C. Seismic Performance: Elevator system shall withstand the effects of earthquake motions determined according to ASCE/SEI 7 and shall comply with elevator seismic requirements in ASME A17.1/CSA B44.

1. The term "withstand" means "the system will remain in place without separation of any parts when subjected to the seismic forces specified."
2. Project Seismic Design Category: B.
3. Elevator Component Importance Factor: 1.0.

4. Design earthquake spectral response acceleration short period (Sds) for Project is 0.251.
5. Provide earthquake equipment required by ASME A17.1/CSA B44.

2.3 ELEVATOR **EL-A**

A. Elevator System, General: Manufacturer's standard elevator systems. Unless otherwise indicated, manufacturers' standard components shall be used, as included in standard elevator systems and as required for complete system.

B. Elevator Equipment Summary:

1. Application: Machine Room-less.
2. Counterweight Location: N/A. Proposal includes Hydraulic.
3. Service: General Purpose.
4. Quantity: 1 Unit.
5. Capacity: 3500 lbs.
6. Speed: 150 fpm.
7. Travel: 20 feet-0 inches.
8. Landings: 3.
9. Front Openings: 1.
10. Rear Openings: 2.
11. Operation: Microprocessor Single Car Automatic Operation.
12. Platform Size: 5 feet- 5 1/2 inches deep x 6 feet-8 inches wide.
13. Door Type: Single Speed Side Opening.
14. Cab Height: 7 feet-4 inches.
15. Guide Rails: Equivalent to 9 lb. per foot.
16. Hoistway Entrances: 4 feet 0 inches -wide x 7 feet -high doors.
17. Power Supply: 202/208 Volts 3 Phase 60 Hz.

C. Elevator Components and Features:

1. Braille and audible signals.
2. Dispatch protection.
3. Door nudging.
4. Emergency lighting.
5. Failed car.
6. False car canceling.
7. Firefighter's Service.
8. Independent service.
9. Infrared light curtain door protection.
10. Inspection service.
11. Load weigh bypass.
12. Locking Service Panel in Car Operating Panel.
13. Remote monitoring capable.
14. Telephone (ADA compliant).
15. Emergency Power.
16. Card Reader Capability.

2.4 SYSTEMS AND COMPONENTS

A. Pump Units: Positive-displacement type with a maximum of 10 percent variation between no load and full load and with minimum pulsations.

1. Pump shall be submersible type with submersible squirrel-cage induction motor, and shall be suspended inside oil tank from vibration isolation mounts or shall be tank-top-mounted type with fan-cooled, squirrel-cage induction motor, and shall be mounted on oil tank with vibration isolation mounts and enclosed in prime-painted steel enclosure lined with 1-inch-thick, glass-fiber insulation board.
2. Motor shall have wye-delta or solid-state starting.
3. Motor shall have variable-voltage, variable-frequency control.

B. Hydraulic Silencers: System shall have hydraulic silencer containing pulsation-absorbing material in blowout-proof housing at pump unit.

C. Piping: Size, type, and weight of piping as recommended by elevator manufacturer, with flexible connectors to minimize sound and vibration transmissions from power unit.

D. Hydraulic Fluid: Elevator manufacturer's standard fire-resistant fluid with additives as needed to prevent oxidation of fluid, corrosion of cylinder and other components, and other adverse effects.

E. Inserts: Furnish required concrete and masonry inserts and similar anchorage devices for installing guide rails, machinery, and other components of elevator work. Device installation is specified in another Section.

F. Machine Beams: Provide steel framing to support elevator hoisting machine and deflector sheaves from the building structure. Comply with Section 051200 "Structural Steel" for materials and fabrication.

G. Car Frame and Platform: Welded steel units.

H. Guides: Roller guides or polymer-coated, nonlubricated sliding guides. Provide guides at top and bottom of car and counterweight frames.

2.5 ELEVATOR MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, commercial steel, Type B, exposed, matte finish.

B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, commercial steel, Type B, pickled.

C. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304.

D. Stainless-Steel Bars: ASTM A 276, Type 304.

E. Stainless-Steel Tubing: ASTM A 554, Grade MT 304.

F. Stainless-Steel Finish: No.4 Directional.

G. Aluminum Extrusions: ASTM B 221, Alloy 6063.

H. Plastic Laminates:

1. Type: High-pressure type complying with NEMA LD 3, Type HGS for flat applications and Type BKV for panel backing.
2. Flame Spread Ratings: As required by code.
3. Pattern: As selected by Architect from elevator manufacturer/installer’s standard selections.

I. Machines, Microprocessor Controller, Controls, Pushbuttons, and Wiring: UL, CSA, or CUL approved.

J. Buffers, Attachment Brackets, and Anchors: Design and size according to building code with safety factors.

K. Positioning System: System consisting of proximity sensors and door zone vanes.

L. Guide Rails and Attachments: Provide Tee-section steel rails with brackets and fasteners. Side counterweight arrangements shall have a dual-purpose bracket that combines both counterweight guide rails, and one of the car guide rails to building fastening.

2.6 ELEVATOR CABS

A. Overall Cab Height: 8 feet-0 inches.

B. Car Frame and Safety: Provide car frame with adequate bracing to support the platform and car enclosure. The safety shall be integral to the car frame.

C. Platform: Provide platform of steel construction with plywood subfloor. Threshold is Aluminum.

D. Car Guides:

1. Provide guide shoes mounted to top and bottom of both car and counterweight frame. Arrange each guide shoe assembly to maintain constant contact on the rail surfaces. Provide retainers in areas with Seismic design requirements.

E. Cab Decoration:

1. Car wall finish**:**

a. Plastic Laminate: Provide full range of Manufactures color selection for Architects approval.

2. Car front and door finish: No. 4 Stainless Steel finish.
3. Ceiling finish: Suspended ceiling frames in a powder coat with LED energy-saving lights.
4. Handrail: 1-3/8 -inch Round, Stainless Steel Finish.

a. Side-Mounting.

5. Flooring: Provide Sheet vinyl LVT-1 as specified in Section 096519 “Resilient Tile Flooring”
6. Ventilation: Provide a fan in the canopy.
7. Emergency Siren: Provide siren mounted on top of the car that is activated when the Alarm button in the car operating panel is engaged.
8. Emergency Exit Switch: Provide an electrical contact to open the safety circuit when the emergency car top exit is opened. When the exit door is opened, the top exit switch shall signal the control and the car will be unable to move.

F. Infrared Light Curtain Door Protection:

1. Equip leading edges of car doors with concealed transmitter and receiver infrared beam devices to detect presence of object in process of passing through hoistway entrance and car doorway.
2. Use multi-beam, 2-dimensional scanning without moving parts to detect obstructions in door opening.

3. Detector Device: Prevent doors from closing, or if they have already started closing, cause doors to reopen and remain open while object is within detection zone.

2.7 HOISTWAY ENTRANCES

A. Hoistway Doors and Frames:

1. Doors: Rigid flush design both sides with dual panels.
2. Rib Construction with welded, sandwiched panels.
3. Finish: Brushed Stainless Steel.
4. No glued, single paneled doors permitted.
5. Frames: No. 4 Stainless Steel - Main Floors No. 4 Stainless Steel - Typical Floors. (Note if true MRL with Inspection and Test Panel at top landing, the jamb must be minimum of 4 inches at landing.)

B. Sills: Aluminum.

2.8 DOOR OPERATOR AND REOPENING DEVICES

A. Door Operator: Provide a closed loop VVVF high performance door operator with frequency controlled drive for fast and reliable operation to open and close the car and hoistway doors simultaneously.

B. In case of interruption or failure of electric power, the doors can be readily opened by hand from within the car, in accordance with applicable code.

C. Doors shall open automatically when the car has arrived at or is leveling at the respective landings. Doors shall close after a predetermined time interval or immediately upon pressing of a car button. Provide door open button in the car operating panel. Momentary pressing of this button shall reopen the doors and reset the time interval.

D. Provide door hangers and tracks for each car and hoistway door. Contour tracks to match the hanger sheaves. Design hangers for power operation with provisions for vertical and lateral adjustment. Hanger sheaves shall have polyurethane tires and pre-lubricated sealed for life bearings.

2.9 CAB FIXTURES

A. Main Car Operating Panel:

1. Flush or Full Swing return.

    a. Quantity per car: 1.

2. Comply with handicap requirements.
3. Pushbuttons: Stainless steel that Illuminate using long-lasting LEDs included for each floor served.
4. Emergency Buttons and Switches: Provide in accordance with code.
5. Switches for car light and accessories.
6. Car Operating Panel must be the full height of the elevator front return – **no applied panels permitted**. Car Operating Panel must be Door height less .078 inch.
7. Finish: No. 4 Stainless Steel.

B. Cab Fixtures:

1. Car Lantern(s).
2. Digital Car Position Indicator with High Definition.
3. Locking Service Panel in Car Operating Panel (optional).
4. Telephone (ADA compliant).

C. Special Features:

1. Audible chime to signal that the car is either stopping at or passing a floor served by the elevator.
2. Raised markings and Braille provided to the left-hand side of each push button.
3. Door open and close push buttons.
4. Firefighter's hat and Phase 2 Key-switch.
5. Elevator Data Plate marked with elevator capacity and car number.
6. Help Button: Activation of help button will initiate two-way communication between car and a location inside the building, switching over to alternate location if call is unanswered, where personnel are available to take the appropriate action. Visual indicators are provided for call initiation and call acknowledgement.
7. Card reader capability.

2.10 HALL FIXTURES

A. Pushbuttons:

1. Stainless steel finish.
2. Up button and down button at intermediate floors.
3. Single button at each terminal floor.
4. Height: Comply with handicap requirements.
5. Illumination: Illuminate using long-lasting LEDs (Hall Lanterns and Position Indicators) that illuminate direction arrows with audible and visible call acknowledgement. LED button ring shall have continuous LED white light and when pressed, color shall switch to red to indicate call has been registered.

B. Hall Fixture Finish: Brushed Stainless Steel.

C. Hoistway access switches: Provide key-switch at top and bottom floor in entrance jamb as required by local code.

D. Firefighter's Phase 1 Service: Key switch in brushed stainless-steel cover plate.

E. Emergency Pictorial Signs: Fabricate from materials matching hall push-button stations, with text and graphics as required by authorities having jurisdiction, indicating that in case of fire, elevators are out of service and exits should be used instead. Provide one sign at each hall push-button station unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine elevator areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work. Verify critical dimensions and examine supporting structure and other conditions under which elevator work is to be installed.

B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install cylinder plumb and accurately centered for elevator car position and travel. Anchor securely in place, supported at pit floor and braced at intervals as needed to maintain alignment. Anchor cylinder guides at spacing needed to maintain alignment and avoid overstressing guides.

B. Welded Construction: Provide welded connections for installing elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustment, inspection, maintenance, and replacement of worn parts. Comply with AWS workmanship and welding operator qualification standards.

C. Sound Isolation: Mount rotating and vibrating equipment on vibration-isolating mounts to minimize vibration transmission to structure and structure-borne noise due to elevator system.

D. Install piping above the floor, where possible. Install underground piping in casing.

1. Excavate for piping and backfill encased piping according to applicable requirements in Section 312000 "Earth Moving."

E. Lubricate operating parts of systems as recommended by manufacturers.

F. Alignment: Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with car. Where possible, delay installation of sills and frames until car is operable in shaft. Reduce clearances to minimum, safe, workable dimension at each landing.

G. Leveling Tolerance: 1/4 inch, up or down, regardless of load and travel direction.

H. Set sills flush with finished floor surface at landing. Fill space under sill solidly with nonshrink, nonmetallic grout.

I. Locate hall signal equipment for elevators as follows unless otherwise indicated:

1. Place hall lanterns either above or beside each hoistway entrance.
2. Mount hall lanterns at a minimum of 72 inches above finished floor.

3.3 FIELD QUALITY CONTROL

A. Advise Owner, Architect, and authorities having jurisdiction in advance of dates and times that tests are to be performed on elevators.

B. Perform tests of elevator as required by ANSI/ASME A17.1 and governing codes.

C. Elevator manufacturer must conduct a full installation and safety inspection prior to local code authority inspection. Manufacturer must retain serial numbers of all safety and major equipment installed on the installation in an installation specific report. Report to be stored and filed with manufacturer for 20 years.

3.4 ADJUSTING

A. Adjust elevators for proper operation in accordance with manufacturer/installer’s instructions.

B. Adjust elevators for smooth acceleration and deceleration of car so not to cause passenger discomfort.

C. Adjust doors to prevent opening of doors at landing on corridor side, unless car is at rest at that landing, or is in leveling zone and stopping at that landing.

D. Adjust automatic floor leveling feature at each floor to within 1/4 inch of landing.

E. Repair minor damages to finish in accordance with manufacturer/installer’s instructions and as approved by Architect.

F. Remove and replace damaged components that cannot be successfully repaired as determined by Architect.

3.5 CLEANING

A. Clean elevators promptly after installation in accordance with manufacturer/installer’s instructions.

B. Do not use harsh cleaning materials or methods that could damage finish.

3.6 PROTECTION

A. Protect installed elevators from damage during construction.

B. If elevators are used for temporary construction, GC/Owner to protect elevators.

3.7 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to operate, adjust, and maintain elevator(s).

B. Check operation of [elevator with Owner's personnel present before date of Substantial Completion and again not more than one month before end of warranty period. Determine that operation systems and devices are functioning properly.

3.8 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of elevator Installer. Include monthly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper elevator operation at rated speed and capacity. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.

1. Perform maintenance during normal working hours.
2. Include 24-hour-per-day, 7-day-per-week emergency callback service with response time of two hours or less.

END OF SECTION 142400

SECTION 230717 – ROUND SUPPLY DUCT INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, General Provisions of Contract, including General and Supplementary Conditions and Section 23 0501 apply to this Section.

1.2 SUMMARY

A. Furnish and install round supply duct insulation as described in Contract Documents.

1.3 QUALITY ASSURANCE

A. Insulation shall be UL rated with FSK (foil-skrim-kraft) facing.

PART 2 - PRODUCTS

2.1 MANUFACTURED UNITS

A. Fiberglass blanket insulation

B. Approved Manufacturers:
   1. Johns-Manville R-4 Microlite (R-4 does not include the vapor barrier material).
   2. Owens-Corning faced duct wrap insulation FRK-25 ED-150
   3. Certainteed Standard Duct Wrap.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Insulate round air supply ducts.

B. Facing shall overlap 2" at joints and shall be secured with outward clinch staples on 4" centers.

C. Ducts over 30" in width shall have spot application of adhesive, weld pins or metal screws and caps on not more than 18" centers applied to underside.

D. 3" wide vapor barrier paper shall be applied over seams and sealed with vapor barrier adhesive.

E. Insulate attenuators.

F. Insulate high and low pressure flex ducts.

END OF SECTION 230717

SECTION 230718 - DUCT LINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, General Provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, and Section 23 0501 apply to this Section.

1.2 SUMMARY

A. Furnish and install acoustic lining in following above ground metal ductwork as described in Contract Documents unless detailed otherwise:
   1. Outside air
   2. Supply air
   3. Return air
   4. Mixed air
   5. Transfer air
   6. Relief air
   7. Elbows, fittings, and diffuser drops greater than 12 inches in length.

1.3 SYSTEM DESCRIPTION

A. Duct dimensions shown on Drawings are for free area inside insulation. Allowance must be made for insulation, where applicable.

1.4 RATINGS:

A. Material shall have maximum air friction correction factor of 1.10 at 1000 FPM velocity and have a minimum sound absorption coefficient NRC of .60.

PART 2 - PRODUCTS

2.1 DUCT LINER

A. One inch thick, 1-1/2 lb density fiberglass, factory edge coated.

B. Duct lining materials are to meet the requirements of UL 181 for mold, humidity, and erosion resistance.

C. Approved Manufacturers:
   1. Certainteed Ultralite 150 Certa Edge Coat
   2. Knauf - Type M
   3. Manville - Lina-Coustic
   4. Owen Corning Fiberglas - Aeroflex

2.2 ADHESIVE

A. Water Base Type:
   1. Cain - Hydrotak
   2. Duro Dyne - WSA
   3. Kingco - 10-568
   4. Miracle - PF-101
   5. Mon-Eco - 22-67

6. Techno Adhesive - 133

B. Solvent Base (non-flammable) Type:
1. Cain - Safetak
2. Duro Dyne - FPG
3. Kingco - 15-137
4. Miracle - PF-91
5. Mon-Eco - 22-24
6. Techno Adhesive - 'Non-Flam' 106

C. Solvent Base (flammable) Type:
1. Cain - HV200
2. Duro Dyne - MPG
3. Kingco - 15-146
4. Miracle - PF-96
5. Mon-Eco - 22-22
6. Techno Adhesive - 'Flammable' 106

2.3 FASTENERS

A. Adhesively secured fasteners not allowed.

B. Approved Manufacturers:
1. AGM Industries Inc - "DynaPoint" Series DD-9 pin
2. Cain
3. Duro Dyne
4. Omark dished head "Insul-Pins"
5. Grip nails may be used if each nail is installed by "Grip Nail Air Hammer" or by "Automatic Fastener Equipment" in accordance with Manufacturer's recommendations.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install mat finish surface on air stream side. Secure insulation to cleaned sheet metal duct with continuous 100% coat of adhesive and with 3/4 inch long mechanical fasteners 12 inches on center maximum unless detailed otherwise on Drawings. Pin all duct liner.

B. Accurately cut liner and thoroughly coat ends with adhesive. Butt joints tightly. Top and bottom sections of insulation shall overlap sides. If liner is all one piece, folded corners shall be tight against metal. Ends shall butt tightly together.

C. In casings and plenums further contain insulation with wire mesh.

3.2 FIELD QUALITY CONTROL

A. If insulation is installed without longitudinal and end joints butted together, installation will be rejected and work removed and replaced with work that conforms to this Specification.

B. Insulation shall be installed in accordance with Duct Liner Application Standard SMACNA Manual 15.

3.3 ADJUSTING, CLEANING

A. Keep duct liner clean and free from dust. At completion of project, vacuum duct liner if it is dirty or dusty.

END OF SECTION 230718