PROJECT MANUAL VOLUME 1 OF 2
PHASE III – CONSTRUCTION DOCUMENTS

SPECIFICATIONS FOR CONSTRUCTION OF:

CLASSROOM BUILDING ADDITION
YULEE MIDDLE SCHOOL
85439 MINER ROAD
YULEE, FLORIDA 32097

NCSD PROJECT NO. 98960-221
RDSA PROJECT NO. D-20-06

APRIL 16, 2021

Civil
Mittauer & Associates
580-1 Wells Road
Orange Park, Florida 32073
Telephone: 904.278.0030

Landscape
Blue Leaf Landscape, Inc.
1540 Pershing Road
Jacksonville, Florida 32205
Telephone: 904.517.1225

Structural
Keister|Webb Structural Engineers, LLC
6501 Arlington Expressway, Bldg. B, Suite 156
Jacksonville, Florida 32211
Telephone: 904.619.2333

Mechanical, Electrical, Plumbing, Fire Protection
M. V. Cummings Engineers, Inc.
6501 Arlington Expressway, Bldg. B, Suite 211
Jacksonville, Florida 32211
Telephone: 904.724.0660

R·DEAN SCOTT
ARCHITECT, INC.

126 W. ADAMS STREET, SUITE 602
JACKSONVILLE, FLORIDA 32202
TELEPHONE: 904.598.0072
WEBSITE: WWW.RDEANSCOTT.COM
LICENSE NUMBER AR0014890

TITLE PAGE

PROJECT MANUAL
PHASE III – CONSTRUCTION DOCUMENTS

SPECIFICATIONS FOR CONSTRUCTION OF:

CLASSROOM BUILDING ADDITION
YULEE MIDDLE SCHOOL
85375 MINER ROAD
YULEE, FLORIDA 32097

NCSD PROJECT NO. 98960-221
RDSA PROJECT NO. D-20-06

APRIL 16, 2021

OWNER
Nassau County School District
1201 Atlantic Avenue
Fernandina Beach, Florida 32034

ARCHITECT
R. Dean Scott, Architect, Inc.
126 West Adams Street, Suite 602
Jacksonville, Florida 32202
Phone: 904.598.0072

CIVIL CONSULTANT
Mittauer & Associates
580-1 Wells Road
Orange Park, Florida 32073
Phone: 904.278.0030

LANDSCAPE CONSULTANT
Blue Leaf Landscape, Inc.
1540 Pershing Road
Jacksonville, Florida 32205
Phone: 904.517.1225

STRUCTURAL CONSULTANT
Keister|Webb Structural Engineers, LLC
6501 Arlington Expressway
Building B, Suite 156
Jacksonville, Florida 32211
Phone: 904.619.2333

MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION CONSULTANT
M. V. Cummings Engineers, Inc.
6501 Arlington Expressway
Building B, Suite 211
Jacksonville, Florida 32211
Phone: 904.724.0660

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DIVISION 33: UTILITIES (CONT)

END OF SECTION 000002

SECTION 000040 - STATEMENT OF COMPLIANCE

Project Architect's Statement of Compliance in accordance with State Requirements for Educational Facilities 2014, Section 4.3 Documents and Submittals (8) (a) 2:

To the best of my knowledge, these Drawings and Project Manual are complete and comply with the Florida Building Code (Seventh Edition) and Florida Fire Prevention Code (Seventh Edition).

END OF SECTION 000040

SECTION 000050 - NON-ASBESTOS CERTIFICATION

To the best of my knowledge these Contract Documents do not contain any asbestos containing materials intended for use in construction.

END OF SECTION 000050

SECTION 001000 - NOTICE TO BIDDERS

Notice is hereby given that The Nassau County School District, hereafter referred to as "Owner", will receive sealed bids from pre-qualified firms ("Bidders") for the following:

Classroom Building Addition
Yulee Middle School
85439 Miner Road
Yulee, Florida 32097
NCSD Project No. 98960-221

This project will be constructed under a single prime contract with all bids received on a lump sum basis. Each proposal shall include all labor, material, services, taxes and fees necessary to complete the project in strict accordance with the Bidding Documents.

Bids will be received at the following place, date and time:

PLACE: Board Room
Nassau County School District
1201 Atlantic Avenue
Fernandina Beach, Florida 32034

DATE: Tuesday, July 13, 2021

TIME: 1:00 PM (Local Time)

All bids received at such place, date and time will be publicly opened and read aloud. Bids received after such time will be returned to the respective Bidder, unopened.

Bidding Documents may be examined by prospective Bidders, during normal business hours, at the office of the Project Architect.

Project Architect: R. Dean Scott, Architect, Inc.
126 West Adams Street, Suite 602
Jacksonville, Florida 32202
Attn: Dean Scott (dscott@rdeanscott.com)
904.598.0072
www.rdeanscott.com

Complete sets of Bidding Documents may be obtained by Bidders on or after June 1, 2021 by contacting the Document Vendor indicated below:

Document Vendor: DMCS Digital
1910 Huntsford Road
Jacksonville, Florida 32207
Attn: Clark Williams (clark@flablueprint.com)
904.518.1777
www.dmcsdigital.com

(Public Advertisement Dates: June 2, 2021, June 9, 2021 & June 16, 2021)

In accordance with the Instructions to Bidders, a non-refundable charge shall be paid by cash, check or charge for each complete printed set or electronic copy of Bidding Documents obtained from Document Vendor. This is the sole method to be used to become identified as a registered plan holder and bidder of record. All pre-qualified Bidders must maintain status as a registered plan holder and bidder of record through this method. Any or all Addenda shall be distributed electronically to all plan holders of record.

Each bid must be accompanied by a bid security, which shall not be less than five percent (5%) of the Base Bid, in the required form and submitted in accordance with the Instructions to Bidders.

The Bidder to whom an award is made, shall furnish a 100% Performance Bond & Labor and Material Payment Bond in accordance with the Instructions to Bidders.

No bid shall be modified, withdrawn or canceled for a period of sixty (60) calendar days after the date and time set for receipt of bids.

Bidders were required to pre-qualify to the approval of the Owner. Pre-qualified firms were approved by the Nassau County School Board on November 12, 2020.

Bidders shall attend a MANDATORY pre-bid conference at the project site with representatives of the Owner and Architect to discuss securities, scope of work, site access / storage areas and requirements for personnel working on the Project.

MANDATORY pre-bid conference will start at 1:00 p.m., local time, June 17, 2021.

Bidders shall submit all questions and requests for substitutions to the Architect no later than 5:00 p.m., local time, on June 25, 2021. Questions and requests submitted after this time shall not be considered.

Owner reserves the right to reject any and all bids; is not obligated to accept the lowest or any other bid; and may waive any formalities in bidding procedures.

Nassau County School District thanks all Bidders for their interest in improving school facilities in Nassau County.

Date: May 28, 2021

By: Jeffrey L. Bunch, Director of Facilities

END OF SECTION 001000

SECTION 002113 - INSTRUCTIONS TO BIDDERS

PART 1 - GENERAL

1.1 DOCUMENTS

A. Bona fide bidders may obtain sets of Project Documents as indicated in Section 001000, Notice to Bidders.

1.2 EXAMINATION

A. Bidders shall carefully examine the documents and the construction site to obtain first-hand knowledge of existing conditions. Contractors shall not be given extra payments for conditions which could have been determined by examining the site and documents.

1.3 QUESTIONS

A. Submit all questions about the Drawings and Project Manual to the Architect, in writing. Replies will be issued to all bidders of record as Addenda to the Drawings and Project Manual and will become part of the Contract. The Owner will not be responsible for oral clarification. Reference the Notice to Bidders for last date to submit questions.

1.4 SUBSTITUTIONS

A. To obtain approval to use unspecified products, Bidders shall submit written request to the Architect. Reference the Notice to Bidders for last date to submit questions. Requests received after this time will not be considered. Requests shall clearly describe the product for which approval is asked, including all data necessary to demonstrate acceptability. If the product is acceptable, the Architect will approve it by Addendum issued to Bidders of record. See Section 016010 Product Substitutions for substitution request form. Substitution requests must be made on this form.

1.5 BASIS OF BID

A. The Bidder must include all unit cost items and all alternates shown on the Bid Forms; failure to comply may be cause for rejection. No segregated bids or assignments will be considered.

1.6 PREPARATION OF BIDS

A. Bids shall be typed on the Bidder’s letterhead, in the same form as included in the Project Manual, Section 004000 Bid Form. Fill in all blank spaces. Bids shall be signed with name typed below signature. Where Bidder is a corporation, bids must be signed with the legal name of the corporation followed by the name of the State of incorporation and the legal signatures of an officer authorized to bind the corporation to a contract.

1.7 BID SECURITY

A. Bid Security shall be made payable to the Owner in the amount of five (5%) percent of the bid sum. Security shall be either certified check or bid bond issued by surety licensed to conduct business in the State of Florida. The successful Bidder's security will be retained until Bidder has signed the Contract and furnished the required payment and performance bonds. The Owner reserves the right to retain the security of the next lowest Bidder until the lowest Bidder enters into contract or until thirty (30) days after bid opening, whichever is the shorter. All other bid security will be returned as soon as practicable. If any Bidder refuses to enter into a Contract, the Owner will retain Bidder's Bid Security as liquidated damages, but not as a penalty. The Bid Security is to be submitted with the Submission of Bids.

1.8 PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

A. Furnish and pay for bonds covering faithful performance of the Contract and payment of all obligations arising there under. Furnish bonds in such form as the Owner may prescribe and with surety company acceptable to the Owner. The Bidder shall deliver said bonds to the Owner at the time established in Article 1.16 herein, for the execution of the Contract. Failure or neglecting to deliver said bonds, as specified, shall constitute a breach of Contract and the Bid Security shall be forfeited. See also, Sections 006100 Payment Bonds, 006200 Performance Bonds and 006201 Bond and Certificates.

1.9 SUBCONTRACTORS

A. The Bidder shall have determined to their own satisfaction that subcontractors have been successfully engaged in the particular type of business for a reasonable length of time, have successfully completed installations comparable to that required by this project and are qualified technically and financially to perform work for which the subcontractor is listed. All subcontractors shall be capable of being bonded.

B. The Owner reserves the right to reject any subcontractor not certified and/or registered by the State of Florida to perform the work of their trade if such registration is required by Florida Law.

C. A list of subcontractors and suppliers shall be submitted to the Architect for review and approval with the Contractor's Bid. Appropriate and required qualifications and licensure are a prerequisite for listing. See 004001 Subcontractor List.

1.10 SUBMITTAL

A. Submit bid and Bid Bond in an opaque, sealed envelope. Identify the envelope with: (1) project name, (2) name of bidder. Submit Bids in duplicate and in accordance with the Invitation to Bid.

1.11 MODIFICATION AND WITHDRAWAL

A. Bids may not be modified after submittal. Bidders may withdraw bids at any time before bid opening, but may not resubmit them. No bid may be withdrawn or modified after the bid opening except where the award of Contract has been delayed for sixty (60) days beyond the receipt of bids.

1.12 DISQUALIFICATION

A. The Owner reserves the right to disqualify bids, before or after opening, upon evidence of collusion with intent to defraud or other illegal practices upon the part of the Bidder(s).

1.13 GOVERNING LAWS AND REGULATIONS

A. Florida Excise Tax: Bidders should be aware of the Florida Law as it relates to tax assessments on construction equipment.

1.14 OPENING

A. Bids will be opened as announced in Section 001000 Notice to Bidders.

1.15 AWARD

A. It is the Owner's intention to award a contract to the responsible bidder submitting the lowest responsive bid consisting of the base bid and any alternates accepted.

B. The Owner reserves the right to add funds to the project in order to make an award or to accept any alternate desired.

C. The Owner reserves the right to accept or reject any and/or all bids.

D. Owner may request the Bidders to present evidence of experience, qualifications, and financial ability to carry out the terms of the Contract.

E. Alternates shall be accepted in any order, and/or the Owner may not accept some alternates in order to utilize the maximum amount of funds available.

1.16 EXECUTION OF CONTRACT

A. Notwithstanding any delay in the preparation and execution of the formal Contract Agreement, each Bidder shall be prepared to commence work within seven (7) days following receipt of official written order of the Owner to proceed, or on date stipulated in such order.

B. The accepted Bidder shall assist and cooperate with the Owner in preparing the formal Contract Agreement, and within seven (7) days following its presentation shall execute same and return it to the Owner.

END OF SECTION 002113

SECTION 004000 - BID FORM

Date: _____

Time: _____

Director of Facilities, Nassau County School District:

The undersigned, hereinafter "Bidder", having visited the site of the proposed Project and having familiarized myself with the local conditions, nature and extent of the Work; and having examined carefully the Drawings, Specifications, Form of Agreement, and other Contract Documents; and with the Bond requirements herein; proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of:

Classroom Building Addition
Yulee Middle School
85439 Miner Road
Yulee, Florida 32097
NCSD Project No. 98960-221

Bidder will complete the Project in full accordance with the Contract Documents and has prepared bid in accordance with the Invitation for Bids, Instructions to Bidders, and all other documents relating thereto. Bidder, if awarded the contract, will complete the Work specified for the following amounts (in lawful currency of the United States of America):

A. Bid Item 1: Building 11, Chiller Installation and Related Civil / Mechanical / Electrical Site Work
Construction Complete Except Bid Items 2, 3, 4 and 5

_____dollars

($_____)

B. Bid Item 2: Site Work
Construction Complete Except Bid Items 1, 3, 4 and 5

_____dollars

($_____)

C. Bid Item 3: Electric Vehicle Charging Stations and Related Civil / Electrical Site Work
Construction Complete Except Bid Items 1, 2, 4 and 5

_____dollars

($_____)

D. Bid Item 4: Aluminum Covered Walkways, Sidewalks Beneath and Canopy Lighting Construction Complete Except Bid Items 1, 2, 3 and 5

_____dollars

($_____)

E. Bid Item 5: Trench Safety Act Compliance Complete Except Bid Items 1, 2, 3 and 4.

_____dollars

($_____)

F. TOTAL BASE BID (Sum of Bid Items 1, 2, 3, 4 and 5):

_____dollars

($_____)

ALTERNATES: None.

Enclosed with bid is a certified check, cashier's check, treasurer's check, bank draft, or Bid Bond in the amount of not less than five (5%) percent of the total base bid plus all additive alternates (if any) payable to the Owner as a guarantee for the purpose set out in your Instructions to Bidders.

The Bidder hereby agrees that:

A. The above proposal shall remain in full force and effect for a period of thirty (30) calendar days after the time of the opening of this proposal and that the Bidder will not revoke or cancel this proposal within the said thirty (30) calendar days after the time of the opening of this proposal.

B. In the event the contract is awarded to this Bidder, it shall be signed within seven (7) days after the School Board of Nassau County approval of award of bid. At contract signing, Bidder shall furnish to the Owner a contract Performance and Payment Bond with good and sufficient sureties, satisfactory to the Owner, in the amount of 100% of the accepted bid. The Bidder further agrees that in the event of the Bidder's default or breach of any of the agreements of this proposal, the said bid deposit shall be forfeited as liquidated damages.

Acknowledgment is hereby made of receipt of the following Addenda issued during the bidding period.

Addendum No. _____Dated_____

Addendum No. _____Dated_____

Addendum No. _____Dated_____

Addendum No. _____Dated_____

I have examined the Documents, Drawings, and the site, and submit the following Proposal, IN DUPLICATE.

In accordance with requirements, the Bidder has included the following submittals with this Bid:

1. Bonds as indicated
2. Section 004001, Subcontractor List
3. Section 004320, Florida Trench Safety Act
4. Section 004322, Unit Price Sheet
6. Section 004650, Public Entity Crimes Statement

If awarded this construction contract, the Bidder agrees to complete the work within the time limits set forth as indicated in Section 011100 Summary of Work.

In accordance with the requirements of the contract general conditions as well as the requirements of Florida Statutes Title XLI Chapter 725 Unenforceable Contracts Section 725.06 which requires a specific consideration be given to the indemnitor in exchange for its indemnification, Contractor acknowledges that one percent (1%) of the contract price is established for this purpose, and is specifically included as part of the Contractor's general conditions costs included in its bid.

Should the Contractor fail to substantially complete work under this Contract on or before the date stipulated for Substantial Completion (or such later date as may result for extension of time granted by Owner), Contractor shall pay Owner, as liquidated damages, the sum of $2,500.00 per day for each consecutive calendar day that terms of the contract remain unfulfilled beyond date allowed by the Contract, which sum is agreed upon as a reasonable and proper measure of damages which Owner will sustain per diem by failure of Contractor to complete work within time as stipulated. In no way shall costs for liquidated damages be construed as a penalty on the Contractor. Refer to Section 011100 Summary of Work, for a schedule of the Substantial Completion Date(s) affecting the Liquidated Damages.

For each consecutive calendar day that the work remains incomplete after the date established for Final Completion, the Owner will retain from the compensation otherwise to be paid to the Contractor the sum of $1,000.00 per day. Refer to Section 011100 Summary of Work. This amount is the minimum measure of damages the Owner will sustain by failure of the Contractor to complete all remedial work, correct deficient work, clean up the project and other miscellaneous tasks as required to complete all work specified. This amount is in addition to the liquidated damages for Substantial Completion as described above.

This proposal is based solely upon materials and equipment made by manufacturers listed in the Specifications, on the Drawings or in the Addenda issued during the bidding period.

The Bidder hereby agrees that the Owner reserves the right to waive informalities in bidding and reject any or all bids, or to accept any bid that is judged will be in the best interest of the Owner.

In witness whereof, the Bidder has hereunto set his signature and affixed his/her seal this _____ _day of _____ , in the year two thousand twenty-one.

Florida Construction Industries Licensing Board Certification:

Name of Holder: _____

Certification No.: _____

(SEAL)

FIRM: _____

SIGNATURE: _____

PRINTED NAME: _____

TITLE: _____

END OF SECTION 004000

SECTION 004001 - SUBCONTRACTOR LIST

Subcontractors and Manufacturers for certain prevalent scopes of work and other required information (listed below) are to be submitted with the bid. Use this form or provide custom form on company letterhead containing equivalent information.

Complete list of Subcontractors with Project contract or contracts over $50,000.00 cumulatively is to be submitted to Owner via the Architect no later than three (3) calendar days after the date of Notice to Proceed.

Date:_____

Director of Facilities, Nassau County School District:

RE: Classroom Building Addition
Yulee Middle School
NCSD Project Number 98960-221

The undersigned, as authorized representative for the Contractor, certifies that listed subcontractors and manufacturers will be engaged (use for list submitted with bid) or have been engaged (use for list submitted after Notice to Proceed) for the following Work, have successfully manufactured products comparable to those products required for this Project, completed installations comparable to those required by this Project, and are qualified technically and financially to complete the Work required for this Project. Furthermore, where required, the subcontractors and/or manufacturers are actively licensed and properly insured per State of Florida, local jurisdictions and Project specific requirements.

The following subcontractors (Sub) and product manufacturers (Mfr) will be engaged / have been engaged to perform Work on this Project as indicated below:

Scopes of Work	Firm Name and Location (City and State)
1. Sitework (Sub)	
2. Cast-In-Place Concrete (Sub)	
3. Concrete Masonry (Sub)	
4. Brick Masonry (Mfr)	
5. Structural Steel – AISC Fabricator (Mfr)	
6. Structural Steel – AISC Installer (Sub)	
7. Metal Trusses – Fabricator (Mfr)	
8. Metal Trusses – Installer (Sub)	
9. Shingle Roofing (Sub)	

10. Metal Wall Panel System (Mfr) _____

11. Windows / Storefront (Mfr) _____

12. Resilient Flooring (Sub) _____

13. Hard Tile Flooring (Sub) _____

14. Laminate Casework / Cabinetry (Mfr) _____

15. Science Casework / Cabinetry (Mfr) _____

16. Painting (Sub) _____

17. Acoustical Ceilings (Sub) _____

18. Aluminum Canopy (Mfr) _____

19. Mechanical (Sub) _____

20. Mechanical – AHU (Mfr) _____

21. Mechanical – Chiller (Mfr) _____

22. Plumbing (Sub) _____

23. Electrical (Sub) _____

24. Fire Alarm System (Sub) _____

In witness whereof, the Contractor has hereunto set his/her signature and affixed his/her seal this _____ day of _____, in the year two thousand twenty-one.

Firm: _____

Signature: _____

Printed Name: _____

Title: _____

END OF SECTION 004001

SECTION 004320 - FLORIDA TRENCH SAFETY ACT

As a bidder on this Project, I acknowledge that excavations deeper than five feet (5') below grade may be required as part of this Project. I acknowledge costs for complying with the Florida Trench Safety Act as required by Florida Statutes Title XXXIII Regulation of Trade, Commerce, Investments, and Solicitations Chapter 553 Building Construction Standards - Part III Trench Safety Act (553.60 – 553.64) are included in the bid. Such costs are summarized below:

		QUANTITY		**UNIT COST**		**AMOUNT**
1.	Trench Safety Act Compliance	_____ LF	x	$ _____ /LF	=	$ _____
2.	Special Shoring	_____ SF	x	$ _____ /SF	=	$ _____

Identify method of compliance for item 1: _____

_____

Identify or attach a copy of the Special Shoring requirements for item 2: _____

_____

Undersigned certifies that he/she is the Contractor who will design and install trench safety systems for this Project, and hereby gives written assurance that he/she will comply with the applicable requirements of Florida Trench Safety Act.

FIRM: _____

SIGNATURE: _____

PRINTED NAME: _____

TITLE: _____

Sworn to and subscribed before me this _____ day of _____, 2021.

NOTARY PUBLIC: _____
(Printed Name)

_____
(Signature)

My Commission Expires: _____ (SEAL)
(Date)

END OF SECTION 004320

SECTION 004322 - UNIT PRICE SHEET

NOTE:
1. Unit prices below are to be included with Bidder's proposal for the Project.
2. Should the Scope of the Work be modified during the course of the Project, these unit prices will be basis for the contract adjustment.
3. Unit prices shall be valid for both increases in scope and decreases in scope.

PROJECT: YULEE MIDDLE SCHOOL – CLASSROOM BUILDING ADDITION

NAME OF BIDDER: _____

Unit prices shall be valid for the duration of the Project.

Item of Work	Unit	Unit Price
Galvanized Chain Link Fence – 6 Feet High	Linear foot	
Galvanized Chain Link Fence Gate – 4 Foot Wide x 6 Foot High Single	Each	
Galvanized Chain Link Fence Gate – 12 Foot Wide x 6 Foot High Pair	Each	
Fine Grading and Sod as Specified	Square Yard	
Trench Excavation (Backhoe)	Cubic Yard	
Trench Backfill (No. 57 Stone / Compacted)	Cubic Yard	
Concrete Sidewalk, Broom Finish, 4" Thick	Square Foot	
Over-excavation of Unsuitable Soils and Disposal Offsite	Cubic Yard	
Import and Place Suitable Fill for Undercut or Over-excavated Areas	Cubic Yard	

END OF SECTION 004322

SECTION 004650 - PUBLIC ENTITY CRIMES STATEMENT

PROJECT: CLASSROOM BUILDING ADDITION
YULEE MIDDLE SCHOOL
NCSD PROJECT NUMBER 98960-221

Sworn Statement per Title XIX Public Business Section 287.133 (3) (a), Florida Statues, on Public Entity Crimes.

This form must be signed in the presence of a Notary Public or other officer duly authorized to administer oaths.

1. This sworn statement is submitted with the bid for the Project named above.
2. This sworn statement is submitted by _____
(Print Individual's Name Submitting this Sworn Statement)

   whose business is _____ and business address is
(Name of Business)

   _____
(Address of Business)

   and (if applicable) its Federal Employer Identification Number (FEIN) is _____

   (If the entity has no FEIN, include the individual's Social Security Number): _____

3. My name is _____; my relationship to the entity named
(Print Name of Individual Signing Statement)
   above is _____

4. I understand that a "public entity crime" as defined in Paragraph 287.133 (1) (g), Florida Statues, means a violation of any State or Federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other State or with the United States, including, but not limited to, any bid or contract for goods or services to be provided to any public entity or an agency or political subdivision of any other State or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.
5. I understand that "convicted" or "conviction" as defined in Paragraph 287.133 (1) (b), Florida Statues, means a finding of guilt or a conviction of a public entity crime, with or without an adjudication of guilt, in any Federal or State trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, non-jury trial, or entry of a plea of guilty or nolo contendere.
6. I understand that an "affiliate" as defined in Paragraph 287.133 (1) (a), Florida Statues, means:
   a. A predecessor or successor of a person convicted of a public entity crime, or
   b. An entity under the control of any natural person who is active in the management of the entity and who has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one person of shares constituting a controlling interest in another person, or pooling of equipment or income among persons when not for fair market value under arm's length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding 36 months shall be considered an affiliate.

7. I understand that a "person" as defined in Paragraph 287.133 (1) (e), Florida Statues, means any natural person or entity organized under the laws of any State or the United States with the legal power to enter into binding contract and which bids or applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.

8. Based upon information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. *(Please indicate which statement applies with your initials)*

_____ Neither the entity submitting this sworn statement, nor any officers, directors, executives, partners, shareholders, employees, members, or agents who are active in management of the entity, nor any affiliate of the entity have been charged with and convicted of a public entity crime subsequent to July 1, 1989.

_____ The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members, or agents who are active in management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989, AND (Please indicate which additional statement below applies)

_____ There has been a proceeding concerning the conviction before a hearing officer of the State of Florida, Division of Administrative Hearings. The Final Order entered by the hearing officer did not place the person or affiliate on the convicted vendor list. (Please attach a copy of the Final Order)

_____ The person or affiliate was placed on the convicted vendor list. There has been a subsequent proceeding before a hearing officer of the State of Florida, Division of Administrative Hearings. The Final Order entered by the hearing officer determined that it was in the public interest to remove the person or affiliate from the convicted vendor list. (Please attach a copy of the Final Order)

_____ The person or affiliate has not been placed on the convicted vendor list. (Please attach a separate sheet of paper to this form and describe the action taken by or pending with the Department of General Services)

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM FOR THE PUBLIC ENTITY PROJECT IDENTIFIED ABOVE IS FOR THAT PUBLIC ENTITY PROJECT ONLY AND, THAT THIS FORM IS VALID THROUGH DECEMBER 31 OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THE PUBLIC ENTITY PRIOR TO ENTERING INTO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017, FLORIDA STATUTES FOR CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

Affiant's Printed Name: _____

Affiant's Signature: _____

Date: _____

STATE OF _____

COUNTY OF _____

The person who signed this statement personally appeared before me, the undersigned authority,

_____ who, after first being sworn by me, affixed his/her
(Name of Individual Signing Statement)

signature in the space provided above on this _____day of _____, 2021.

Notary Public: _____
State of Florida
My commission expires: _____

(SEAL)

END OF SECTION 004650

SECTION 006100 - PAYMENT BONDS

BY THIS BOND, We, _____, as Principal and a corporation, as Surety, are bound to *(insert Owner's name and address)* _____

_____,

herein called Owner, in the sum of (*insert written amount)*_____

$_____, for payment of which we bind ourselves, our heirs, personal representatives, successors, and assigns, jointly and severally.

THE CONDITION OF THIS BOND is that if Principal:

1. Promptly makes payments to all claimants, as defined in Section 255.05 (1), Florida Statutes, supplying Principal with labor, materials, or supplies, used directly or indirectly by Principal in the prosecution of the work provided for in the contract; and

2. Pays Owner all losses, damages, expenses, costs, and attorney's fees, including appellate proceedings, that Owner sustains in enforcement of this bond.

3. Performs the guarantee of all materials furnished under the contract for the time specified in the contract, then this bond is void; otherwise it remains in full force.

4. Any changes in or under the contract documents and compliance or noncompliance with any formalities connected with the contract or the changes does not affect Surety's obligation under this bond.

5. The provisions of Florida Statute 255.05 are specifically adopted by reference and made a part hereof for all purposes.

DATED _____, 2021.

SIGNATURE:_____

PRINTED NAME: _____

TITLE: _____

SURETY:_____

END OF SECTION 006100

SECTION 006200 - PERFORMANCE BONDS

THIS AGREEMENT, made this _____ day of _____, 2021, between _____, referred to as Contractor, and _____, hereinafter referred to as Surety. The parties recite and declare as follows:

1. They are held and firmly bound to *(insert Owner's name/address)* _____ _____, Florida's Obligee, herein referred to as Owner in the amount of (*insert written amount)* _____ _____$_____Dollars, for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, personal representatives, successors and assignees, jointly and severally, firmly by this Agreement.

2. Contractor has, by written agreement dated _____ , 2021, entered into a contract with *(Owner's name and address)* _____ for the construction of _____ in accordance with Plans, Drawings and Project Manual prepared by _____ which contract includes in its terms the Plans, Drawings and Project Manual and all amendments, modifications and addendum thereto as prepared by _____ and which by reference are made a part hereof, and are herein referred to as the Contract.

3. The condition of this obligation is such that, if Contractor shall fully, promptly and faithfully perform the contract and all obligations thereunder including all items specified on the Architect and/or Engineer's punch list for completion of the project as prepared by the Architect and/or Engineer subsequent to actual Date of Substantial Completion as determined by the Architect's and/or Engineer's Certificate of Substantial Completion, then this obligation shall be null and void; otherwise, it shall remain in full force and effect and cover latent defects which arise after the Architect has certified the construction to be substantially complete and the Owner has accepted the Project.

For the reasons recited above, and in consideration of the mutual covenants of the parties set out herein, the parties agree as follows:

A. Whenever the Contractor shall be and shall be declared by the Owner to be in default under the Contract, the Owner, having performed Owner's obligations thereunder, the Surety shall promptly remedy the default by completion of the contract in accordance with its terms and conditions by the direct employment of a contractor or contractors and/or subcontractors as same shall be necessary to complete the contract and as same shall be acceptable to the Owner. Or, by obtaining a bid or bids for the completion of the contract in accordance with its terms and conditions upon determination by the Owner and the Surety of the lowest and best bidder, authorize the Owner to enter into a contract with such bidder for the completion of the contract in accordance with the terms and conditions of the original contract together with such additional work as is necessary to remedy any damage, depreciation, waste or loss as shall have been suffered by the project as the direct or indirect result of the default required to be remedied. In the event the second option is elected by Surety, upon the execution of the contract and commencement of performance thereunder, Surety shall make available as the work progresses sufficient and necessary funds to pay the costs of remediation of the default and completion of the contract in accordance with the schedule for payment as established by the successor remediation contract. Surety shall be given credit against any sums so due for any unpaid balance of the original contract price retained by the Owner and not claimed by the

original contractor. In no event, however, shall Surety, pursuant to the terms and conditions of this provision, be required to pay more than a sum equal to the original contract price as same shall be amended from time to time as set forth in this bond, together with any additional sums accruing as the result of amendments to the original contract prior to default and sums necessary to remedy any damage, depreciation, waste or loss as shall have been suffered by the project as the direct or indirect result of the default required to be remedied, with the exception that in addition hereto, Surety shall be required to pay all costs and attorney's fees incurred by Owner for the enforcement of this bond including trial and appellate proceedings. The term "balance of contract price" shall mean the difference between the sum of money set aside and possessed by Owner for the payment of any sums due from owner to contractor under the terms and conditions of the original contract as same may have been amended from time to time and any sums not so paid pursuant to the original contract as same may been amended prior to declared default thereof to the extent that same is not claimed by or found to be due the original contractor.

B. If and in the event Surety shall not have advised Owner in writing as to Surety's election to remedy the declared default within twenty (20) days from the date of receipt of Owner's Declaration of Default, the Owner may, at its election, act to remedy the default by obtaining a bid or bids for completion of the contract, and by entry into a successor contract for completion with the lowest and best bidder. Further, in the event Surety shall fail to notify Owner of its election and if Owner should elect to proceed hereunder to remedy the default then, and in that event, Surety shall promptly pay to Owner all sums necessary to enable Owner to comply with the payment provisions of any successor completion contract less any credit due Surety. Surety shall not have the right, in that event, to object on the grounds that the successor contractor as selected by the Owner is not the lowest and best bidder on that the successor contract price is excessive unless the objection shall be based on demonstrated amendments to the plans and Project Manual made subsequent to the declared default and constituting new work other than that work contracted for prior to the date of declaration of default, except as to additional work as is necessary to remedy any damage, depreciation, waste or loss as shall have been suffered by the project as the direct or indirect result of the default required to be remedied. The Surety shall be liable to the Owner for all consequential damages which it has incurred resulting from any breach by the Surety of this Performance Bond. All notices to Owner shall be directed to *(insert Owner's address)* _____.
In the event the money is not promptly paid and suit is commenced by the Owner under this subsection, the Surety is liable for all costs and attorneys' fees.

C. All actions brought upon this bond shall be instituted in Nassau County, Florida.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement the day and year first above written.

Witnesses:

_____ By:_____

As to Contractor — Contractor

_____ By:_____

As to Surety — Attorney in Fact for Surety

END OF SECTION 006200

SECTION 006201 - BONDS AND CERTIFICATES

PART 1 – GENERAL

1.1 General

A. Provide Payment and Performance Bonds as required by Title XVIII Public Lands and Property, Chapter 255 Public Property and Publicly Owned Buildings, Section 255.05, Florida Statutes.

B. The Contractor is hereby directed, as a condition of the contract, to acquaint himself / herself with the Articles contained herein and to notify and apprise all subcontractors, suppliers and any other parties to the Contract or individuals or agencies engaged on the work as to its contents.

C. No contractual adjustments shall be due as a result of failure on the part of the Contractor to fully acquaint himself / herself and all other parties to the contract with the conditions of this Document.

D. Surety providing Contractor's Bonds shall be licensed to operate in the State of Florida and shall be rated "A-" or better by Best Insurance Rating Guide and appear in the current list of Sureties published by the U.S. Department of Treasury.

END OF SECTION 006201

SECTION 007000 – STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

AIA Document A101 – 2017 shall be the basis of the agreement between Owner and Contractor. Sample of the document follows this section.

END OF SECTION 007000

AIA® Document A101® – 2017

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of the day of in the year
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

Nassau County School District
1201 Atlantic Avenue
Fernandina Beach, Florida 32034

and the Contractor:
(Name, legal status, address and other information)

for the following Project:
(Name, location and detailed description)

Classroom Building Addition
Yulee Middle School
85439 Miner Road
Yulee, Florida 32097

The Architect:
(Name, legal status, address and other information)

R. Dean Scott, Architect, Inc.
126 West Adams Street, Suite 602
Jacksonville, Florida 32202
Qualifier's License Number AR0014890

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete A101®–2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201®–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

TABLE OF ARTICLES

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which 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 agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:
(Check one of the following boxes.)

[ ] The date of this Agreement.

[ ] A date set forth in a notice to proceed issued by the Owner.

[ ] Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:
(Check one of the following boxes and complete the necessary information.)

[ ] Not later than ( ) calendar days from the date of commencement of the Work.

[ ] By the following date:

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be ($), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item	Price

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.
(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance

§ 4.3 Allowances, if any, included in the Contract Sum:
(Identify each allowance.)

Item	Price

§ 4.4 Unit prices, if any:
(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit ($0.00)

§ 4.5 Liquidated damages, if any:
(Insert terms and conditions for liquidated damages, if any.)

§ 4.6 Other:
(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the day of the month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than ( ) days after the Architect receives the Application for Payment. *(Federal, state or local laws may require payment within a certain period of time.)*

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule 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 Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

.1 That portion of the Contract Sum properly allocable to completed Work;

.2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and

.3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

.1 The aggregate of any amounts previously paid by the Owner;

.2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;

.3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;

.4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and

.5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

§ 5.1.7.1.1 The following items are not subject to retainage:
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:
(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:
(Insert any other conditions for release of retainage upon Substantial Completion.)

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

§ 5.1.9 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.

§ 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and

.2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

§ 5.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.
(Insert rate of interest agreed upon, if any.)

%

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:
(Check the appropriate box.)

[ ] Arbitration pursuant to Section 15.4 of AIA Document A201–2017

[ ] Litigation in a court of competent jurisdiction

[ ] Other *(Specify)*

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

§ 7.1.1 If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:
(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:
(Name, address, email address, and other information)

§ 8.3 The Contractor's representative:
(Name, address, email address, and other information)

§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A101™–2017 Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:
(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

§ 8.7 Other provisions:

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

.1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor

.2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds

.3 AIA Document A201™–2017, General Conditions of the Contract for Construction

.4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:
(Insert the date of the E203-2013 incorporated into this Agreement.)

.5 Drawings

Number	Title	Date

.6 Specifications

Section	Title	Date	Pages

.7 Addenda, if any:

Number	Date	Pages

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

.8 Other Exhibits:
(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

[ ] AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:
(Insert the date of the E204-2017 incorporated into this Agreement.)

[ ] The Sustainability Plan:

Title	Date	Pages

[ ] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

.9 Other documents, if any, listed below:
(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™–2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

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

OWNER *(Signature)*	**CONTRACTOR** *(Signature)*
(Printed name and title)	*(Printed name and title)*

SECTION 007001 - GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

AIA Document A201 – 2017 shall be the basis for the general conditions of the contract between Owner and Contractor. Sample of the document follows this section.

END OF SECTION 007001

AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

Classroom Building Addition
Yulee Middle School
85439 Miner Road
Yulee, Florida 32097

THE OWNER:
(Name, legal status and address)

Nassau County School District
1201 Atlantic Avenue
Fernandina Beach, Florida 32034

THE ARCHITECT:
(Name, legal status and address)

R. Dean Scott, Architect, Inc.
126 West Adams Street, Suite 602
Jacksonville, Florida 32202
Qualifier's License Number AR0014890

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.

TABLE OF ARTICLES

Init.
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(Topics and numbers in bold are Section headings.)

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document

G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

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

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

.1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and

.3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and

delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

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

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will

specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

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

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- **.1** The change in the Work;
- **.2** The amount of the adjustment, if any, in the Contract Sum; and
- **.3** The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- **.1** Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- **.2** Unit prices stated in the Contract Documents or subsequently agreed upon;
- **.3** Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- **.4** As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

.1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;

.2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;

.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and

.5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

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

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

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

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

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

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

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

.1 defective Work not remedied;

.2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;

.3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;

.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
.5 damage to the Owner or a Separate Contractor;
.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
.7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- **.1** liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- **.2** failure of the Work to comply with the requirements of the Contract Documents;
- **.3** terms of special warranties required by the Contract Documents; or
- **.4** audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

.1 employees on the Work and other persons who may be affected thereby;
.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property
If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances
§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will

promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or

expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during

that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;

.2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;

.3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or

.4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- **.1** repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- **.2** fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- **.3** repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- **.4** otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- **.1** Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- **.2** Accept assignment of subcontracts pursuant to Section 5.4; and
- **.3** Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

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

§ 14.4 Termination by the Owner for Convenience

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

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

- **.1** cease operations as directed by the Owner in the notice;

.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

SECTION 007300 - SUPPLEMENTARY CONDITIONS

The following supplements modify, change, delete from, or add to the "General Conditions of the Contract for Construction," AIA Document A201, 2017 edition. Where an Article of the General Conditions is modified or a Paragraph, Subparagraph, or a Clause thereof is modified or deleted by these supplements, the unaltered provisions of that Article, Paragraph, Subparagraph, or Clause shall remain in effect.

ARTICLE 1: GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

1.1.1 Add the following sentence of this Subparagraph to read as follows:

The Contract Documents also include Lien Waivers of any type (Partial, Full, Progress, Final, etc.) and bonds furnished as part of the Contract.

1.1.9 (Add) Miscellaneous Definitions

.1 The term "product" as used herein includes materials, systems, and equipment.

.2 The term "supplier" as used herein, includes a firm or organization furnishing or delivering products directly to the jobsite, and because of such direct delivery, could be construed under the lien laws of the State in which the work is being performed as having lien rights against the funds due the Contractor. Suppliers of material and equipment, delivering to Contractor or Subcontractor on an open account basis and not having lien rights on the Work, will not be considered suppliers within the meaning of the Contract Documents.

.3 A bidder selected to enter into a Contract with the Owner for Work included under the bidder's proposal is termed an "Awardee," until such time as bidder is awarded a Contract and becomes the Contractor.

.4 Where "complete" is used, it shall mean "complete with connections, supports, attachments and incidental items necessary for a finished and properly operating assembly or installation."

.5 Where "drawing" is used, it shall mean plans and detail drawings, both large and small scale, furnished by the Architect and/or Engineers for the purpose of indicating the Work to be done.

.6 The term "furnish" shall mean to supply (only) to another party for their use of installation, including cost of delivery and unloading at the jobsite.

.7 The term "install" shall mean to distribute, uncrate, assemble, and fix into the intended final positions, the installer to provide all miscellaneous hardware and supplies required to anchor and support securely, clean-up, and dispose of rubbish.

.8 The term "connect" shall mean to bring service(s) to point of installation and make final connections to the service(s) to the installed equipment, and to provide miscellaneous auxiliary appurtenances necessary to make operable for its intended use.

.9 The term "provide" shall mean to furnish, install, and connect complete.

.10 The term "or equal" shall mean an equal approved in writing by the Architect at least ten (10) days prior to bid receipt, and listed in an Addendum.

.11 The term "Contractor" refers to the Prime Contractor that has the direct contract with the Owner. Any person providing work on the Project other than the Prime Contractor is a "Subcontractor."

1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

1.2.4 (Add) Should there be a conflict between two or more of the Contract Documents, the following order of interpretation shall apply:

.1 The terms and conditions as set forth in the Bidding Requirements, including legal advertisement thereof, shall have full force and effect until such time as the Standard Form of Agreement between Owner and Contractor is executed between the Owner and the Awardee.

.2 Where there is a conflict between the Bidding Requirements and the Contract Documents, the Contract Documents shall govern.

.3 Where requirements specifically set forth in AIA A101-2017, Standard Form of Agreement Between Owner and Contractor are in conflict, AIA A201-2017, General Conditions of the Contract for Construction shall govern.

.4 Where there is conflict between the requirements of the General Conditions of the Contract and the Supplementary Conditions, the requirements of the Supplementary Conditions shall govern, except where the requirements set forth in the Supplementary Conditions are contrary to law, in which case the legal requirements shall govern. The General Conditions of the Contract shall take precedence over other Contract Documents.

.5 Where there is conflict between the Drawings and Specifications and conflict within the Drawings or within the Specifications, the conflict, where applicable, shall be resolved by providing better quality or greater quantity as provided in the Supplementary Conditions, Clause 3.2.5.

ARTICLE 2: OWNER

2.3 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.3.1 (Add the following to the first sentence)..., "including those charges and costs related to zoning changes, environmental impact statements, and similar legal requirements related to use of the site."

2.3.4 (Add the following after the second sentence) "The Contractor shall confirm the location of each utility, shall relocate or dispose of each on-site utility and shall cap each utility as required by the Work or the Specifications. The Contractor shall not be entitled to additional compensation resulting from its failure to confirm the location of the site utilities or existing structures prior to the opening of its bid."

ARTICLE 3: CONTRACTOR

3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

3.2.5 (Add) "Where there is a conflict in or between the Drawings and Specifications, the Contractor shall be deemed to have estimated on the more expensive way of doing the Work and the larger quantity required. Only changes or interpretations covered by Addenda or in writing from the Architect will be permitted during construction of the Work. The Contractor shall perform no portion of the Work at any time without Contract Documents or where required, received Shop Drawings, Product Data, or Samples for such portion of the Work."

3.2.6 (Add) "Before ordering material or performing any Work, the contractor shall verify all measurements at the Project site. Any differences between dimensions on the Drawings and actual measurements shall be

brought to the Architect's attention for consideration before the Work proceeds. Where actual measurements require more material and work than the Drawings call for, such material and Work shall be supplied at the cost of the Contractor. No extra compensation will be allowed because of difference between actual measurements and dimensions indicated on the Drawings. The Contractor shall assume full responsibility for accuracy of measurements obtained at the work site."

3.2.7 (Add) "Mechanical and Electrical Drawings are diagrammatic only. Actual work involved shall be installed from received Shop Drawings with all measurements obtained at the Project Site by the Contractor."

3.2.8 (Add) "Dimensions which are lacking from the Drawings shall be obtained from the Architect or field verified. In no case shall the Contractor assume that the Drawings are scaled."

3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

3.3.2 (Add) "Additional provisions pertaining to coordination are included in Division 1, General Requirements."

3.5 WARRANTY

3.5.3 (Add) "In addition to any other warranties, guarantees, or obligations set forth in the Contract Documents or applicable as a matter of law and not in limitation of the terms of the Contract Documents, the Contractor warrants and guarantees that:

.1 The Owner will have good title to the Work and materials and equipment incorporated into the Work will be new.
.2 The Work and materials and equipment incorporated into the Work will be free from defects, including defects in the workmanship or materials.
.3 The Work and equipment incorporated into the Work will be fit for the purpose for which they are intended.
.4 The Work and materials and equipment incorporated into the Work will be merchantable.
.5 The Work and materials and equipment incorporated into the Work will conform in all respects to the Contract Documents."

3.5.4 (Add) "The Contractor shall, upon completion of the Work, assign to the Owner all warranties obtained or obtainable by, the Contractor from manufacturers and suppliers of equipment and materials incorporated into the Work by written instrument of assignment in a form acceptable to the Owner."

3.5.5 (Add) "For a period of one year from the date of final completion and acceptance of the Work by the Owner, as evidenced by the date of the Substantial Completion, the Contractor warrants to the Owner all movable windows, apparatus, machinery, mechanical and electrical equipment. For the same period, the Contractor warrants to Owner to make good, at his own expense, any defects, shrinkages, warpages or other faults in Work required under this Contract arising out of defective materials or workmanship, ordinary wear and tear excepted."

3.5.6 (Add) "As part of the above warranty, it is expressly understood and agreed that the Contractor warrants that the Contractor's portion of the Work shall be waterproof and weatherproof in every respect for a period of two (2) years from the Date of Substantial Completion."

3.5.7 (Add) "In addition to all of Contractor's warranties and obligations to correct defective Work provided by law

or as set forth in any of the Contract Documents, the Contractor agrees, upon notice from Owner or Architect, immediately to repair, restore, correct and cure, at Contractor's expense, all defects and omissions in workmanship and materials and all failures to comply with the Contract Documents which appear within one (1) year from the Date of Substantial Completion. Contractor shall pay for, and if requested, correct, repair, restore and cure any damage or injury, whenever the same shall occur or appear, resulting from any defects, omissions or failure in workmanship and materials, and indemnify, hold harmless, and defend Owner against any and all claims, losses, costs, damages and expenses, including attorney's fees, suffered by Owner as a result of such damage or injury, whenever such damage or injury shall occur or appear."

3.5.8 (Add) "The foregoing guarantees and warranties shall not shorten any longer warranty or liability period provided for by law or in the plans, drawings or specifications or otherwise received from Contractor or any subcontractor, material supplier or manufacturer of Contractor nor supersede the terms of any liability for defective Work, but shall be in addition thereto, and shall be in addition to all manufacturer's and factory warranties."

3.5.9 (Add) "All guarantees or warranties upon any Work, labor, materials, or equipment by any subcontractor or material supplier of Contractor shall be deemed made by Contractor to Owner. All guarantees and warranties shall survive Owner's final acceptance of the Project. Neither the acceptance of any of the Work by Owner, in whole or in part, nor any payment, either partial or final, by Owner to Contractor, shall constitute a waiver by Owner of any claims against Contractor for defects in the Work, whether latent or apparent, and no such payment or acceptance of the Work by Owner shall release or discharge Contractor or Contractor's surety from any such claims for breach of such warranties."

3.9 SUPERINTENDENT

3.9.4 (Add) "The Architect and Owner shall have the right to require the Contractor to remove a Superintendent and replace with a Superintendent who is satisfactory to the Architect and Owner."

3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

Delete this Paragraph in its entirety. Refer to Section 013300 - Submittals, for provisions on this subject. References to Paragraph 3.12 elsewhere in the Contract Documents shall read as referring to that Section in the Specifications.

3.13 USE OF SITE

Delete this Paragraph in its entirety. Refer to Section 013300 - Submittals, for provisions on this subject. References to Paragraph 3.13 elsewhere in the Contract Documents shall read as referring to that Section in the Specifications.

3.19 (Add) NON-INTERFERENCE

3.19.1 (Add) "The Contractor shall perform Work so as not to interfere with the Owner's ongoing activities and so as not to create any hazards to the Owner's employees or members of the public using the Owner's property."

ARTICLE 4: ARCHITECT

4.2 ARCHITECT'S ADMINISTRATION OF THE CONTRACT

4.2.4 Delete the last sentence in its entirety.

4.2.7 Delete this Subparagraph in its entirety. Refer to Specification Section 013300 - Submittals, for provisions on the subject. References to subparagraph 4.2.7 elsewhere in the Contact Documents shall read as referring to that Section in the Specifications.

ARTICLE 5: SUBCONTRACTORS

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

5.2.1 (Delete the first sentence of this Subparagraph and substitute the following) "The Contractor shall furnish to the Architect in writing the names of the persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each of the principal portions of the Work, in accordance with the requirements under Specification Section 013300, Submittals, in a form acceptable to the Architect, for review by the Owner and the Architect.

5.2.4 (Add the following sentence at the end of this Subparagraph) ... "The Owner may require the Contractor to change a Subcontractor or Sub-subcontractor previously approved, and, if at such time the Contractor is not in default under this Agreement, the Contract sum shall be increased or decreased by the difference in the cost resulting from the change.

5.3 SUBCONTRACTUAL RELATIONS

5.3.1 (Add) "Not withstanding the provisions of Paragraph 5.3, any part of the Work performed for the Contractor by a Subcontractor or its Sub-subcontractor shall be pursuant to a written Subcontract between the Contractor and such Subcontractor (or the Subcontractor and its Sub-subcontractor at any tier). Architect will assume no responsibility for reviewing, monitoring, or verifying activities or relationships involving a Subcontractor or its Sub-subcontractor."

5.3.2 (Add) "The Contractor shall not enter into a subcontract, contract agreement, purchase order, or other arrangement ("Arrangement") for the furnishing of portions of the materials, services, equipment or Work with a party of entity if such party to entity is an Affiliated Entity (as defined below), unless such Arrangement has been approved by the Owner of such affiliation relationship and details relating to the proposed Arrangement. The term "Affiliated Entity" means an entity related to or affiliated with the Contractor or with respect to which the Contractor has direct or indirect ownership or control, including, without limitation, an entity owned in whole or part by the Contractor."

ARTICLE 7: CHANGES IN THE WORK

7.2 CHANGE ORDERS

7.2.2 (Add) "Methods used in determining adjustments to the Contract Sum shall be those listed in Subparagraph 7.3.3."

7.3 CONSTRUCTION CHANGE DIRECTIVES

7.3.3 (Delete Clause .4 from Subparagraph 7.3.3 and add the following Clauses)

7.3.3.4 An itemized cost breakdown for each change required.

7.3.3.5 (Add) "The Contractor's overhead and profit on any Change Order shall be:

.1 For extra Work completed by the Contractor with his own labor, 10 percent (10%) shall be added as the allowance for overhead and profit.

.2 For extra Work completed by Subcontractors of the Contractor, 10 percent (10%) shall be added for the Subcontractor as the allowance for overhead and profit and 5 percent (5%) shall be allowed to the Contractor for overhead and profit.

.3 For Work deleted which would have been completed by Subcontractors of the Contractor, one-half (1/2) of the above amounts in 7.3.3.5.1 & 7.3.3.5.2 shall be credited to the Owner by the Contractor as the allowance for overhead and profit.

7.3.4 (Change the phrase in the first sentence) ... "a reasonable amount" ... to read ... "a fixed percentage fee as provided in Clause 7.3.3.5."

7.3.8 (Revise the last sentence of Subparagraph 7.3.7 to read as follows) ... "When both additions and deletions are involved in any one change, the allowance for overhead and profit shall be figured on the basis of net increase or decrease, if any."

7.3.11 (Add) "When either the Owner or the Contractor disagree with the determination made by the Architect concerning adjustments in the Contract Sum and Contract Time, such disagreement shall be resolved in the manner set forth in Article 15 Claims and Disputes."

7.3.12 (Add) "In order to facilitate checking of quotations for costs incurred or credits, proposals (except those so minor that their propriety can be seen by inspection) shall be accompanied by a complete itemization of costs including labor, materials and Subcontractors. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are Subcontracts, they shall be itemized also. In no case will a change involving over $500 be approved without such itemization. The Contractor shall submit same to the Architect within fourteen (14) days after receipt of proposal request."

ARTICLE 8: TIME

8.1 DEFINITIONS

8.1.2 (Delete and replace with the following) "The date of commencement of the Work is the effective date established in the Agreement or the date established in the Notice to Proceed given by the Owner or Architect."

8.3 DELAYS AND EXTENSION OF TIME

8.3.4 (Add) "If in the opinion of the Architect the Work is behind where it is supposed to be in the Project Time Schedule or it is likely that the Work will not be substantially complete by the applicable date for Substantial

Completion, the Contractor upon written notice from the Architect and without additional cost or compensation will increase its work force and, if requested by the Architect, work such overtime to make up for the delay. Should the Contractor fail to increase its work force, work overtime, or proceed to make up for the delay to the satisfaction of the Architect or the Owner, the Architect or the Owner, in addition to other remedies under this Agreement and other Contract Documents, will have the right to cause other Contractors to work overtime and to take whatever other action is deemed necessary to avoid delay in the Substantial Completion of the Work and of the Project, and the cost and expense of such overtime and other action will be borne by the Contractor and may be set off against sums due the Contractor."

ARTICLE 9: PAYMENTS AND COMPLETION

9.2 SCHEDULE OF VALUES

Delete this Paragraph in its entirety. Refer to Specification Section 013300 - Submittals, for provisions on this subject. References to Paragraph 9.2 elsewhere in the Contract Documents shall read as referring to that Section in the Specifications.

9.3 APPLICATIONS FOR PAYMENT

9.3.1 Delete this Subparagraph, Clauses 9.3.1.1 and 9.3.1.2.

9.3.1 (Add) "Applications for payment shall be made at approximately 30-day intervals in accordance with the dates established in the Standard Form of Agreement Between Owner and Contractor. At least 15 days before each progress payments falls due, the Contractor shall submit to the Architect, in quintuplet, an itemized Application for Payment, supported by such data sustaining the Contractor's right to payment as the Owner, or the Architect may require. The form of Application for Payment shall be AIA Document G702 - Application and Certification for Payment, supported by AIA Document G703 - Continuation Sheet in required quantity. No other forms of Application for Payment will be acceptable. Continuation Sheet G703 shall be prepared the same as in the Schedule of Values submitted by the Contractor. Contractor's payment will be made within thirty (30) days after the Contractor's payment application is approved by the Architect. The Contractor will only be paid as described in the Owner-Contractor Agreement."

9.3.1.1 (Add) "Contractor shall submit with each monthly Application for Payment, 1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the previous Application was submitted and the Owner or his property might in any way be responsible, have been paid or otherwise satisfied, and 2) release or waivers of liens arising out of the Contract from each Subcontractor, materialmen, supplier, and laborer of the Contractor in the form of Partial Lien Waiver provided with the Contract Documents or such other form as may be approved by the Architect and Owner, and 3) Nassau County Claims Form available from the city Clerk's office located in Yulee, Florida."

9.3.2 (Add the following at the end of this Subparagraph)…"Payment to Contractor for materials stored off site is discouraged. Where circumstances indicate that the Owner's best interest is served by off-site storage, the Contractor shall make written request to the Architect for approval to include such material costs in his next progress payment. The Contractor's request shall include the following information:

.1 A list of the fabricated materials consigned to the project (which shall be clearly identified), giving the place of storage, together with copies of invoices and reasons why materials cannot be delivered to the site.

.2 Certification that items have been tagged for delivery to the project and that they will not be used

for another purpose.

.3 A letter from the Bonding Company indicating agreement to the arrangements and that payment to the Contractor shall not relieve either party or their responsibility to complete the facility.

.4 Evidence of adequate insurance covering the material in storage, which shall name the Owner as additionally insured.

.5 Costs incurred by the Architect to review material in off-site storage shall be paid by the Contractor.

.6 Subsequent pay requests shall itemize the materials and their cost which were approved on previous pay requests and remain in off-site storage."

9.3.3 (Replace with the following) "The Contractor warrants the title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment and is free and clear of all liens and encumbrances. The Contractor will indemnify the Owner and the Owner's property from any liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors or their Sub-subcontractors, regardless of tier, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials, equipment, services or supplies relating to the Work, and from all cost and expenses, including attorneys' and consultants' fees incurred by the Owner in evaluating or defending against such liens, claims, security interests or encumbrances."

9.3.4 (Add) "Partial payments to the Contractor for labor performed under either a unit or lump sum price Contract shall be made at the rate of 90 percent (90%) of the Contract Sum.

.1 When the payment is made on account of materials or equipment not yet incorporated into the Project, such materials and equipment will become the property of the Owner; provided that if such materials or equipment are stolen, destroyed, or damaged before being fully incorporated into the Project, the Contractor will be required to replace them at its own expense, if not covered by builder's risk policy."

9.3.5 (Add) "Partial or full payment to the Contractor(s) for material, equipment, or work in place shall not start the warranty period, refer to Specification Section 016000 Products, Materials and Equipment."

9.4 CERTIFICATES FOR PAYMENT

9.4.1 (Change text) ... "seven days" ... to read ... "fifteen days".

9.5 DECISIONS TO WITHHOLD CERTIFICATION

9.5.1 (Delete Clauses .1 through .7 and replace with the following)

.1 The Contractor is in default of the performance of any of its obligations under the Contract Documents, including, but not limited to: failure to provide sufficient skilled workers; work, including equipment or materials, which is defective or otherwise does not conform to the Contract Documents; failure to conform to the Project Time Schedule; or failure to follow the directions of or instructions from the Architect or Owner.

.2 The Contractor is in default of the performance of any of its obligations under another Contract, which it has with the Owner.

.3 The filing of the third party claims or reasonable evidence that third party claims have been or will be filed.

.4 The Work has not proceeded to the extent set forth in the Application for Payment.
.5 Representations made by the Contractor are untrue.
.6 The failure of the Contractor to make payments to its Subcontractors, materialmen, or laborers.
.7 Damage to the Owner's property or the property of another Contractor or person.
.8 The determination by the Architect that there is a substantial possibility that the Work cannot be completed for the unpaid balance of the Contract Sum.
.9 Liens filed or reasonable evidence indicating the probable filing of such liens with respect to the Project."

9.5.5 (Add) "Contractor's application for a payment shall reflect an equal percentage amount (within 2-3 percent) for labor and materials for Work completed. The Architect may adjust applications where labor exceeds materials or where materials exceed labor quantities in the Work completed columns."

9.5.6 (Add) "If the Contractor disputes a determination by the Architect with regard to Certificate of Payment, and during any related dispute resolution, litigation, or other proceeding, the Contractor nevertheless shall continue to execute the Work as described in the Contract Documents."

9.7 FAILURE OF PAYMENT

9.7.1 (Change text) Each time "seven" appears in this Subparagraph, replace with "fourteen".

9.8 SUBSTANTIAL COMPLETION

9.8.1 (Change text) After "Contract Documents" insert the following ... "and when all required occupancy permits, if any, have been issued".

9.8.2 (Add the following at the end of this Subparagraph) ... "The time fixed by the Architect for the completion of all items on the list accompanying the Certificate of Substantial Completion shall not be greater than thirty (30) days. The Contractor shall complete items on the list within such 30-day period. If the Contractor fails to do so, the Owner in its discretion may perform the Work by itself or engage others and the cost thereof shall be charged against the Contractor. If more than one review by the Architect for the purpose of evaluating corrected work is required by the subject list of items to be completed or corrected, it will be performed at the Contractor's expense.

.1 If at the time the Architect commences the Substantial Completion Review, the Architect discovers excessive additional items requiring completion or correction, the Architect may decline to continue the review. The Architect shall instruct the Contractor as to the general classification of deficiencies which must be corrected before the Architect will resume the Substantial Completion Review. If the Contractor fails to pursue the Work so as to make it ready for Substantial Completion Review in a timely fashion, the Architect shall, after notifying the Contractor, conduct reviews and develop a list of items to be completed or corrected. This list of items shall be promptly furnished to the Contractor who shall proceed to correct such items within seven (7) days after which time the Architect will conduct additional reviews. The Architect will invoice the Owner for 1) The cost of reviews between the termination of the initial Substantial Completion Review and the commencement of the satisfactory Substantial Completion Review, 2) The cost of review after the 7 day period established for the completion of the list by the Contractor. The Contractor shall reimburse the Owner for such costs, and the Owner may offset the amounts payable to the Architect for such services from the amounts due the Contractor under the Contract Documents."

9.8.6 (Add) "The Contractor shall fully complete all Work under its Contract within thirty (30) days of receiving a Certificate of Substantial Completion with attached list of items required to be completed or corrected. Failure to do so may serve as cause for the Owner to declare the Contractor in default and terminate the Contractor pursuant to Paragraph 14.2 of these Supplementary General Conditions."

9.9 PARTIAL OCCUPANCY OR USE

9.9.4 (Add) "Agreements as to the acceptance of the Work not complying with the requirements of the Contract Documents shall be in writing."

9.10 FINAL COMPLETION AND FINAL PAYMENT

9.10.2 (Add the following to the end of this Subparagraph) "The Contractor shall furnish such evidence as may be necessary to show that any out-of-state subcontractor or supplier has fully met the requirements of payment of taxes as established in any law of the State or local subdivision thereof which may be in effect at the time of final payment. The Owner will require the submission of such proof or evidence before final payment will be approved or made. The following must be submitted to the Architect before approval of final payment:

.1 Affidavit of payment as required under this Paragraph shall be in the form of AIA Document G706 - Contractor's Affidavit of Payment of Debt and Claims.
.2 Release of liens as required under this Paragraph shall be in the form of AIA Documents G706A - Contractor's Affidavit of Release of Liens, or as may otherwise be reasonably requested or required to comply with Florida law.
.3 Consent of Surety as required under this Paragraph shall be in the form of AIA Document G707 - Consent of Surety Company to Final Payment.
.4 Submit releases and final unconditional waivers of lien from major subcontractor and supplier.
.5 Submit certification stating that no materials containing asbestos were incorporated into the Work.
.6 Submit certification that all punch list items have been completed.

9.10.3 (Add the following to the end of this Subparagraph) "Final Payment, constituting the unpaid balance of the Contract Sum, shall be paid to the Contractor in full, including retainage no less than 61 days following the date of Substantial Completion. If at that time there are remaining uncompleted items, an amount equal to 200 percent of the value of each item as determined by the Architect shall be withheld until said items are completed, and a Final Certificate of Payment issued by the Architect."

ARTICLE 10: PROTECTION OF PERSONS AND PROPERTY

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.1 After "take" in line 1 of this subparagraph, add "all".

10.4 EMERGENCIES

10.4 (At the following to the end of this Subparagraph) "Nothing in this paragraph shall be construed as relieving the Contractor from the cost and responsibility for emergencies covered hereby, which with normal diligence, planning, and the close supervision of the Work as required under the Contract, could have been

foreseen or prevented. The General Contractor shall provide the Owner and Architect a list of names and telephone numbers of the designated employees for each Subcontractors to be contacted in case of emergency during non-working hours. A copy of the list will also be displayed on the jobsite."

ARTICLE 11: INSURANCE AND BONDS

11.1 CONTRACTOR'S INSURANCE AND BONDS

11.1.1 (Following the word “maintain” in the first sentence, insert): “… in a company or companies with ratings of no less than A- as determined by A.M. Best Company and to which the Owner has no reasonable objection …”

11.1.2 (Add the following Clauses) "The Contractor's Insurance required by subparagraph 11.1.1 shall be written for not less than the following, or greater if required by law:

.1 Workers' Compensation:
- a. State: Statutory
- b. Applicable Federal (e.g., Longshoremen's): Statutory
- c. Employer's Liability: Statutory

.2 Commercial General Liability Insurance, including Contractual Liability Insurance against the liability assumed hereinabove, and including Contractors' Protective Liability Insurance if the Contractor sublets to another all or any portion of the Work, with the following minimum limits:
Bodily injury (including death) and property damage with a combined single limit of $5,000,000.00.

.3 Comprehensive Automobile Liability Insurance covering any auto used in connection with the Work, with the following minimum limits:
Bodily injury (including death) and property damage with a combined single limit of $5,000,000.00.

"Each of the foregoing minimum limits will be reduced to $1,000,000.00 where contract sum initially is less than $500,000.00. The Contractor shall maintain the foregoing coverage for not less than one (1) year after the Date of Substantial Completion. The foregoing policy limits may be provided in conjunction with an umbrella policy. <u>The following shall be listed as additional insured:</u>

.a *Nassau County School Board*
.b The Architect, its employees, its consultants and their employees.”
"The Contractors Commercial Liability insurance shall be written on an occurrence basis."

11.1.3 (Add the following to the end of this subparagraph) "Within two (2) business days of a request from the Owner or the Architect, the Contractor will provide the Owner with true copies of any insurance policies under which the coverages required herein are provided. Certificates of Insurance shall be submitted on the latest edition of AIA Form G705 or Accord form as acceptable to the Architect.”

11.1.4 (Add) Contractor's commercial general liability insurance shall include all major divisions of coverage and be on a comprehensive basis including:

.1 Premises-Operations including X-C/U as applicable.
.2 Independent Contractors' Protective.

.3 Products and Completed Operations.
.4 Personal Injury Liability, coverages A, B, and C, with Fellow Employee Exclusion deleted.
.5 Contractual - including specified provision for Contractor's obligations under Paragraph 3.18.
.6 Owned, non-owned and hired motor vehicles.
.7 Broad Form Property Damage including Completed Operations.
.8 Stopgap liability for $100,000.00 limit.

11.1.5 (Add) "The Contractor shall require all Subcontractors to provide Workers' Compensation. Comprehensive General Liability, and Automobile Liability Insurance with the same minimum limits specified herein."

11.2 OWNER'S INSURANCE

11.2.2 (Add) "The Owner shall maintain copies of the insurance it is required to purchase and maintain hereunder at its offices and shall permit the Architect or the Contractor to inspect the policies during normal business hours and upon reasonable advance written notice."

ARTICLE 12: UNCOVERING AND CORRECTION OF WORK

12.2 CORRECTION OF WORK

12.2.1 (Replace this Subparagraph with the following) "Within 48 hours after written notices from the Architect, or the Owner (except such period shall be 7 days when notice is given after final payment) that the work does not conform to the Contract Documents, or immediately upon oral notice, if the nonconformance constitutes a threat to the safety of persons or property, the Contractor, without waiting for the resolution of disputes that may exist i) shall commence to correct such nonconformance, ii) shall thereafter use its best efforts to where an extension of time is granted in writing by the Owner, shall complete necessary corrections so that the nonconformance is eliminated to the satisfaction of the Architect, and the Owner within 7 days of such notice. The Contractor shall bear all costs of correcting the nonconformance, including additional testing and inspections and additional service fees of the Architect. The notice provided for in this Subparagraph 12.2.1 may be given at any time. It is the intent that the obligations under this Subparagraph 12.2.1 shall continue to apply after final completion and final payment."

12.2.6 (Add) "If the Contractor fails to correct nonconforming Work as provided in Subparagraph 12.2, the Owner may correct it in accordance with Paragraph 2.4. If the Subcontractor does not proceed with correction of such nonconforming Work as provided in Subparagraph 12.2.1, the Owner may remove it and store the salvageable materials or equipment at the Contractor's expense."

12.3 ACCEPTANCE OF NONCONFORMING WORK

12.3.1 (Add the following at the end of this Subparagraph) "The acceptance of nonconforming Work by the Owner shall be by written Change Order, signed by the Owner's authorized representative. No person has authority to accept nonconforming work except pursuant to such written Change Order."

ARTICLE 13: MISCELLANEOUS PROVISIONS

13.4 TESTS AND INSPECTIONS

13.4.1.1 (Add) "Refer to Specification Section 014500 - Quality Control and Testing Laboratory Services, for

additional provisions on this subject."

13.4.4 (Delete this Subparagraph in its entirety and replace with the following) "Certificates of inspection, testing, or approval, as required by Paragraph 13.4.1. 13.4.2 and 13.4.3, shall be secured by the Contractor using an independent agency, subject to the approval of the Architect, and Owner. The independent agency shall complete field work, testing, and prepare the test reports, logs, and certificates promptly; and deliver the required number of copies directly to the Architect."

13.5 INTEREST

Delete this Paragraph in its entirety. References to Paragraph 13.5 elsewhere in the Contract Documents shall also be deleted.

ARTICLE 14: TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR

14.1 (Delete Subparagraphs 14.1.1., 14.1.2, and 14.1.3 and replace the following)

14.1.1 “Events of Default; each of the following constitutes an event of default of the Contractor:

.1 The failure of the Contractor to perform its obligation under the Contract Documents or under the Contract Documents pertaining to other agreement which the Contractor may have with the Owner and to proceed to commence to correct such failure within 48 hours after written notice thereof from the Owner, or the Architect or such lesser time as is provided in the Contract Documents, or ii) thereafter to use its best efforts to correct such failure to the satisfaction of the Owner, or, iii) except where an extension of time is granted in writing by the Owner, to correct such failure within 30 days after written notice thereof.

.2 The failure of the Contractor to pay its obligations as they become due, or the insolvency of the Contractor.”

14.1.2 “Owner's Remedies; upon the occurrences of an event of default the Owner will have the following remedies, which will be cumulative:

.1 To order the Contractor to stop the Work or part of it, in which case the Contractor will do so immediately;

.2 To perform through others all or part of the Work remaining to be done and to deduct the cost thereof from the unpaid of the Contract Price;

.3 To terminate this Agreement and take possession, for the purpose of completing the Work or part of if, materials, equipment, scaffolds, tools, appliances, and other items belonging to or possessed by the Contractor, of which the Contractor hereby transfers and assigns to the Owner for such purpose, and to employ a person or persons to complete the Work, including the Contractor's employees, and the Contractor will not be entitled to receive further payment until the Work is completed;

.4 Other remedies which the Owner may have at law or in equity or otherwise under the Contract Documents.”

14.1.3 “Payments Due Contractor: If the unpaid balance of the Contract Sum exceeds the cost of finishing the

Work, including compensation of the Architect's additional services and costs, expenses, or damages incurred by the Owner as a result of the event of default, including attorney's fees and the administrative expensive of the Owner's staff, such excess will be paid by the Contractor. If such costs exceed the unpaid balance, the Contractor will pay the difference to the Owner. The amounts to be paid by the Owner or the Contractor will be certified by the Architect, and such certification will be final determination of the amount owed, except for sums coming due thereafter. The obligations under this Subparagraph will survive the termination of this Agreement."

14.2 TERMINATION BY THE OWNER FOR CAUSE

14.2.1 (Replace with the following) "The Contract may be terminated by the Owner in whole or in part without cause and for its convenience upon three (3) days written notice to the Contractor. In the event of such termination for convenience, the Contractor shall be compensated for that portion of the contract sum earned to the date of termination, but Owner shall not be liable for any additional or other consequential damages. Such entitlement of Contractor shall constitute Contractor's sole and exclusive remedy and recover, and in no event shall the Contractor be entitled to recover anticipated profits and overhead on unperformed Work by reason of such termination for convenience."

14.2.5 (Add) "Owner shall have the right to terminate the Contract at any time upon three (3) days written notice to contractor in the event Owner is unable to obtain or maintain financing for the portion of the Work as yet un-financed or uncompleted. Owner shall be obligated to pay Contractor that portion of the Contract Sum earned to the date of termination, but Owner shall not be liable for any additional or other consequential damages."

14.2.6 (Add) "The occurrence of any labor dispute, work stoppage, strike (including sympathetic strike), slow down, picketing, or any other activity directly or indirectly attributable to Contractor's employees, either caused by them or resulting from their employment on the Project which interrupts, interferes with or delays the Work of Contractor or other separate contractors shall constitute a breach of Contract. In such event, the Owner shall have the right, in addition to any other rights and remedies provided by this Contract or the Contract Documents, or by law, following two (2) days' written notice to the Contractor, to terminate this Contract or any part thereof for all or any portion of the Work, and for purpose of completing the Work, to enter upon the premises and take possession in the same manner, to the same extent, and upon the same terms and conditions as set forth in Subparagraph 14.2.2."

14.2.7 (Add) "If termination of the Contract is effectuated by Owner for cause resulting from Contractor's failing to substantially perform in accordance with the terms of the Contract, and it is subsequently found or determined in legal proceedings that the Contractor was not in substantial breach of the Contract by failure to perform in accordance with its terms, or that such failure was caused through fault of the Owner, then such termination shall be deemed to be a termination for convenience pursuant to Subparagraph 14.2.1, and the Contractor's remedy and recovery as against the Owner shall, in such case, be limited to the payments provided by such Subparagraph 14.2.1."

14.2.8 (Add) "With fixed and agreed liquidated damages provided in the Contract, if the Owner terminates for cause the Contractor's right to proceed, the resulting damage to the Owner will consist of such liquidated damages until such reasonable time as may be required for final completion of the Work, together with any increased cost and expenses, including attorneys' fees, occasioned or incurred by Owner in completing the Work."

ARTICLE 15 CLAIMS AND DISPUTES

15.1.2 (Add the following at the end of this Subparagraph) "The Contractor shall not knowingly (as "knowingly" is defined in the Federal False Claims Act, 31 USC Section 3729 et seq.) present or cause to be presented a false or fraudulent Claim. As a condition precedent to making a Claim, the claim shall be accompanied by an affidavit sworn to before a notary public or other person authorized to administer oaths in the State of Florida and executed by an authorized representative of the Contractor, which states that:

The Claim which is submitted herewith complies with Subparagraph 15.1.2 of the Supplementary General Conditions, which provides that the Contractor shall not knowingly present or cause to be a false or fraudulent Claim."

ARTICLE 16: (Add) EQUAL OPPORTUNITY

16.1 POLICIES OF EMPLOYMENT

16.1.1 The Contractor shall not discriminate against employee or applicant for employment because of race, religion, color, gender, or national origin. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, gender, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices for the policies of non-discrimination.

16.1.2 The Contractor shall in solicitations or advertisements for employees placed by them or on their behalf, state that qualified applicants will receive consideration without regard to race, religion, color, gender, or national origin.

END OF SECTION 007300

SECTION 011100 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 PROJECT DESCRIPTION

A. The Project consists of Classroom Building Addition at Yulee Middle School in Yulee, Florida, as indicated on Contract Documents prepared by R. Dean Scott, Architect, Inc., dated April 16, 2021.

B. The Work consists of all items and phasing as indicated on the Drawings and as specified in the Project Manual and those items of construction not indicated but normal and necessary and usual in the construction industry for construction of a building project.

1.3 WORK UNDER SINGLE CONTRACT

A. The intent of this Section is to indicate the Work required by the Contractor and to provide information regarding the duties, responsibilities, and cooperation required by the Contractor, with similar requirements for the subcontractors and suppliers.

B. Prime Contracts are defined to include the following contract described in the Schedule of Contract Responsibilities; and each is recognized to be a major part of the project, with Work to be performed concurrently and in close coordination with Work of other Prime Contracts.

C. The "Contract Documents," as defined in the General Conditions, include "the Drawings." Although Drawings are grouped and identified by classification of the Work, Contractors shall be responsible for their Work as specified herein and as indicated on the Drawings. Although the majority of the Drawings are "to scale," Contractors are directed to use indicated dimensions for determining material quantities and for other reasons. No additional monies will be allowed due to Contractors using "scale instruments" to determine material quantities or for other reasons.

D. A single contract will be awarded as per the attached "Schedule of Contract Responsibilities" in this Section. Contractors shall include Work required by the Specifications and Drawings for each contract area defined in the Schedule.

E. Work for the complete construction of the Project will be under a single contract with the Owner**.**

1.4 WORK SEQUENCE

A. The Work will be conducted to provide the least possible interference to the activities of the Owner's personnel and the public and to permit an orderly transfer of personnel and equipment to the new facilities.

B. Requirements: Substantial Completion for the Project shall be obtained by the Contractor on or before August 1, 2022 or Liquidated Damages shall be applied.

C. Refer to Section 007300, Supplementary Conditions, and 004000, Bid Form for Liquidated Damages requirements.

D. Final Completion for Project: August 31, 2022.

E. Student Test Dates: For Work occurring while school is in session (formal student classes), the Owner reserves the right to restrict the Contractor's work to "No Noise" activities (the definition and intensity of "Noise" to be determined solely by the Owner) for an anticipated number of Contractor work days. The Contractor shall be given a minimum of two (2) weeks' notice prior to any such Test Dates and "No Noise" restriction. Contractor shall be responsible for keeping a log of all required 'No Noise' days and obtaining Owner's signature on that log to verify each required day and number of actual hours.

1.5 ADMINISTRATIVE RESPONSIBILITIES OF PRIME CONTRACTOR

A. The General Contractor shall be responsible for the maintenance of the Construction Schedule and the general supervision of every phase of the Work.

1. Requirements for a specific trade of contract will generally be described in that portion of the Specifications or Drawings related to that trade or contract. Such requirements may, however, be described in other Sections of the Contract Documents. Contractors will be held responsible for having carefully examined all Drawings and read all Divisions of the Specifications and all Contract Documents, to avoid omissions or duplications, and to ensure a complete job.
2. Each Contractor must be fully informed about conditions relating to the construction of the Project and the employment of labor thereon. Failure to do so will not relieve a Contractor of his obligation to furnish all material and labor necessary to carry out the provisions of his Contract.
3. Contractors shall cooperate with the General Contractor in notifying him when the Work is at a stage to require the services of other contractors and shall notify the General Contractor in the event that such other Contractors do not carry out their responsibilities in connection with such notification.

B. Contractors shall cooperate with and assist the General Contractor in the preparation of construction progress and procedures, schedule of product deliveries, and their effect on the overall project progress and completion. Other Contractors shall cooperate in getting their Work and the Work of their subcontractors completed according to the schedule as prepared and maintained by the General Contractor. Each Contractor shall immediately notify the General Contractor of a delay in delivery of products or the scheduled date of completion that may affect the total progress of construction.

C. The Owner will furnish the topographical survey of the area of Work, either as a part of these Drawings or separately, giving the general existing topographical lines and the property lines.

D. Contractors required to make connections to existing utilities, especially sewerage where gravity flow occurs, shall verify grades and locations at points of such connections and shall notify the Architect of circumstances which would adversely affect the proper flow or connection to such facilities.

1.6 CONTRACTOR USE OF PREMISES

A. Limit use of the premises to construction activities in areas indicated or as directed by the Project Manager or Owner's authorized representative.

1. Confine operations to areas within Contract limits indicated. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed.
2. Keep driveways and entrances serving the premises clear and available to the Owner and the Owner's employees at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.

B. Each Contractor shall limit his use of the premises for work and for storage to allow for work by other Contractors and Owner occupancy of adjacent buildings or building areas.

C. Coordinate use of the premises, under direction of the Architect.

D. Each Contractor shall assume complete responsibility for the protection and safekeeping of products under this Contract, stored on the site.

E. Each Contractor shall move his stored products which interfere with operation of the Owner or separate Contractor.

F. Each Contractor shall obtain and pay for the use of additional storage of work areas needed for operation.

G. Nassau County School District requires all Contractors to clear a Level 2 screening as per Section 1012.32 Florida Statutes. Refer to Section 013001 Jessica Lunsford Act Requirements.

1.7 OWNER OCCUPANCY

A. Partial Owner Occupancy: The Owner reserves the right to occupy and to place and install equipment in completed areas of the building, prior to Substantial Completion provided that such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. A Certificate of Substantial Completion will be executed for each specific portion of the Work to be occupied prior to Owner occupancy.
2. Obtain a Certificate of Occupancy from local building officials prior to Owner occupancy.
3. Prior to partial Owner occupancy, mechanical and electrical systems shall be fully operational. Required inspections and tests shall have been successfully completed. Upon occupancy the Owner will provide operation and maintenance of mechanical and electrical systems in occupied portions of the building.

1.8 GRADES, LINES, LEVELS

A. Information pertaining to preliminary investigations, such as test borings, location of utilities, existing structures, and existing grades appear in the Project Manual or on the Drawings. While such data has been collected with reasonable care, there is no expressed or implied guarantee that conditions so indicated are entirely representative of those actually existing or that unforeseen developments may not occur. The Contractor must put his own interpretation on results of such investigation and shall satisfy himself as to materials to be excavated and materials upon which fill or other work may be placed. Where underground services, utilities, structures, etc., are located on the Drawings or given at the site, they are based on available records, but are not guaranteed to be complete or correct. They are merely given to assist each Contractor.

B. The General Contractor shall immediately, upon entering the site for the purpose of beginning work, locate general reference points and take such action as is necessary to prevent their destruction. The Contractor shall lay out his own work and be responsible for all lines, elevations, and measurements of the building, utilities, and other work executed by him under the Contract. The Contractor must exercise proper precaution to verify figures on the Drawings before laying out work and will be held responsible for any error resulting from his failure to exercise such precaution.

C. Using datum furnished by the Owner, the lot lines and present levels have been established as shown on the Site Plan. Other grades, lines levels, and bench marks shall be established and maintained by the Contractors who shall be responsible for them.

D. Each Contractor shall provide required stake-out and grade staking for all work from reference points provided. Each Contractor shall establish all grades, lines, levels, and elevations required for his work from on-site reference points.

E. Each Contractor shall make provision to preserve property line stakes, bench marks, or datum point. If any are lost, displaced, or disturbed through neglect of any other Contractor or Subcontractor, Contractor causing damage shall pay for the cost of restoration.

F. Each Contractor, as it applies to his contract, shall verify grades, lines, levels, locations, and dimensions as shown on Drawings, and report any errors or inconsistencies to the Architect before commencing work. Starting of work by the Contractor shall signify his acceptance.

1.9 TAXES

A. Taxes which the Contractor must pay which are legally enacted at the time bids are received, whether or not effective, shall be paid by the Contractor.

1.10 PERMITS, FEES, AND NOTICES

A. The General Contractor shall secure the general building permit for the Owner. There will be no cost to the General Contractor. Each Contractor shall secure and pay for other permits, governmental fees, and licenses necessary for the proper execution and completion of his Work, which are applicable at the time the bids are also received. Fees to relocate utilities on Owner's property shall be included in the bid of the Contractor doing the relocation. Each Contractor shall be responsible for contacting the local governing agency for such cost information and requirements.

B. Utility Tie-Ins: Shall be arranged with local utility company and other involved parties for minimum interruption of service.

C. Inspections of installed work shall be performed by the governing authority as arranged for by the Contractor. Work shall not be covered until approved.

D. Each Contractor shall give notices and comply with laws, ordinances, rules, regulations, and orders of public authorities bearing on the performance of his Work. If a Contractor observes that the Contract Documents are at variance therewith, he shall promptly notify the Architect in writing, and necessary changes shall be adjusted by appropriate notification. If a Contractor performs Work knowing it to be contrary to such laws, ordinances, rules, and regulations, and without such notice to the Architect, he shall assume full responsibility therefore and shall bear the costs attributable thereto.

1.11 LABOR AND MATERIALS

A. Unless otherwise specifically noted, each Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, temporary power facilities, transportation, and other facilities and services necessary for the proper execution and completion of his Work, whether temporary or permanent and whether or not incorporated or to be incorporated at the Work.

B. Each Contractor shall enforce strict discipline and good working order among his employees or other persons carrying out Work of his Contract and shall not permit employment of unfit person or persons or anyone not skilled in the task assigned to them.

1.12 CUTTING AND PATCHING UNDER SEPARATE CONTRACTS

A. Refer to Section 017329 Cutting and Patching for provisions on this subject.

1.13 PROJECT COORDINATION

A. Each Contractor shall provide full-time, on-site supervision including a competent project coordinator and competent Superintendent to coordinate all aspects of his Work with other Contractors' Work. The Project Coordinator and Project Superintendent may be the same person. It shall be the full responsibility of the General Contractor to coordinate with all phases of Architectural, Structural, Mechanical (including Plumbing, Heating, Ventilation, and Sheet Metal Trades), Electrical Work, Site Work, Special Equipment, and other separate Contract Work. All Separate Contractors shall fully cooperate with each other and the Architect.

B. Each Contractor shall coordinate the performance of his subcontractors in the utilization of the site, as well as in the actual performance of their contractual obligations to the Owner.

C. Each Contractor shall cooperate with the General Contractor and all other Contractors employed by the Owner.

D. Each Contractor shall verify all dimensions shown on the Drawings and obtain all measurements required for proper execution of Work.

E. Each Contractor shall see that sleeves and inserts for pipes, conduits, and similar items shall be correctly placed and kept in their proper positions in forms, walls, partitions, and floors, and not displaced by the placing of concrete or other construction work. All items shall be placed in ample time so as not to delay concrete operations or other work. Do not place sleeves so they pass vertically through beams, girders, and similar construction, unless locations are approved by the Architect. Locations of chases are indicated in the mechanical and electrical drawings. The separate Contractor and/or Subcontractor of the Work involved shall be responsible for inclusion of these items in the work, and shall advise the Contractor and Architect of all required changes.

F. Before commencing work, each Contractor shall examine all spaces, surfaces, and areas indicated on the Drawings to receive their Work. Report necessary corrections in writing immediately to the Architect. Do not proceed until corrections (if any required) have been made. Commencing work signifies this Contractor's acceptance of said spaces, surfaces, and areas, and of job conditions.

G. Special Equipment, Other Equipment

1. Copies of Equipment Specifications and Drawings shall be made available to the Architectural Trade Contractors, Mechanical Contractor, and Electrical Contractor for information by which they shall determine the amount of Work to be done as described herein.
2. As the building project nears completion, certain rooms may be made ready to accept the equipment intended for them.
3. The Contractor shall cooperate with the suppliers' installation personnel by providing unobstructed areas in which they may assemble and install equipment. These areas shall be adequately heated and lighted with temporary or permanent power available for tools or testing purposes.

4. The responsibilities of the Electrical and Mechanical Work Contractors shall be as follows:

   a. Final connections of equipment to building electrical and mechanical rough-ins will be made by the Electrical and Mechanical Work Contractors (interconnection between items of equipment will be done by the installing personnel, not by the Electrical or Mechanical Work Contractors). Equipment requiring only plug-in connections shall have floor outlets installed in accordance with these documents.

H. Temporary Omission of Work

1. If any materials and finish are of such nature that it is necessary to temporarily omit certain portions of work (as illustrated on Drawings or specified in Specifications) in order to make final installation, the Contractor whose work is involved shall omit such parts of this work or finish as necessary until other said work and/or materials have been installed and shall then return and install such omitted parts of his work as part of this Contract and without additional cost to the Owner.

1.14 TESTS AND ADJUSTMENTS

A. If the Contract Documents, laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction require any portion of the Work to be inspected, tested, or approved, the contractor shall give the Architect 48 hours advance notice so he may observe such inspection, testing, or approval. The Contractor shall bear all costs of such inspections, tests, or approvals conducted by or for public authorities.

B. The complete installation of piping, wiring, and working components, including all operating equipment and systems, shall be subjected to test at full operating conditions. The Contractor shall make all necessary adjustments and/or replacements which are necessary to fulfill the requirements of the Contract Documents, and to comply with all codes and regulations which may apply to the entire installation. The complete installation shall be left ready in all respects for use by the Owner. The Contractor shall bear all costs of such testing and adjustments.

C. Unless otherwise provided, the Contractor shall bear all costs of other inspections, tests, and approvals.

1. The Contractor shall bear all costs for scheduled pick-ups or tests if the Testing Agency makes a trip to the site and material or work is not ready for pick up or tests.

1.15 VERIFICATIONS OF EXISTING DIMENSIONS

A. When verification of existing dimensions is required, the Contractor requiring said verification for the construction or fabrication of his material shall be the Contractor responsible for procurement of the field information.

1.16 PROJECT SECURITY

A. The General Contractor shall be responsible for developing and conducting a security program, specifically oriented for the protection of preventing damage, injury, or loss to the entire project site and other property at the site or adjacent thereto. This shall be acceptable to the Owner and Architect, and shall remain in effect through Substantial Completion of the Project.

B. Each Contractor shall be responsible for securing his work and equipment at the close of each workday.

C. The General Contractor shall provide and maintain a secure separation of the worksite from the student population at all times.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 011100

SECTION 012200 - UNIT PRICES

PART 1 - GENERAL

1.1 SUMMARY

A. Measurement and payment criteria applicable to the work performed under a unit price payment method.

B. Defect assessment and nonpayment for rejected work.

1.2 AUTHORITY

A. The Owner and/or Architect will verify measurements and quantities.

1.3 UNIT PRICES REQUESTED

A. Refer to Section 004322, Unit Price Sheet for unit price form that is to be submitted with the Bid Form, for the description of the unit prices required. Refer also to Section 004000 Bid Form.

1.4 PAYMENT

A. Payment includes compensation for required labor, products, materials, tools, equipment, plant, transportation, application and installation of the work; overhead and profit.

B. Final payment for work governed by unit prices will be made on the basis of the actual measurements and quantities accepted by the Owner and/or Architect multiplied by the unit price for work.

1.5 DEFECT ASSESSMENT

A. Immediately replace the work not conforming to specified requirements and as directed by the Architect and/or Owner.

B. It is the authority of the Owner and Architect to assess the defect and identify payment adjustment.

1.6 NONPAYMENT FOR REJECTED PRODUCTS

A. Payment will not be made for any of the following:

1. Products wasted or disposed of in a manner that is not acceptable.
2. Products determined as unacceptable before or after payment.
3. Products not completely unloaded from the transportation vehicle.
4. Products placed beyond the lines and levels of the required work.

5. Products remaining at site after completion of work.
6. Loading, hauling and disposing of rejected products.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with requirements of referenced specification sections for the product.

B. Install all items in strict accordance with the manufacturer's written installation instructions.

END OF SECTION 012200

SECTION 012613 - REQUESTS FOR INFORMATION (RFI) PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies Requests for Information (RFI) procedures.

1.3 DEFINITIONS

A. Drawing/Plan Clarification: An answer from the Architect, on behalf of the Owner, in response to an inquiry from the Contractor, intended to make some requirement(s) of the drawings or plans clearly understood. Drawing/plan clarifications may be sketches, drawings, or in narrative form and will not change any requirements of the drawings or plans. Responses to Contractor inquiries shall be as outlined in “Requests for Information” as specified herein.

B. Non-Conformance Notice: A notice issued by the Architect, on behalf of the Owner, documenting that the Work or some portion thereof has not been performed in accordance with the requirements of the Contract Documents. Payment shall not be made on any portion of the Work for which a Non-Conformance Notice has been issued and the Work not corrected to the satisfaction of the Architect and Owner.

1. Upon receipt of a Non-Conformance Notice, the Contractor shall provide a written Response to Non-Conformance Notice within five (5) working days after receipt of the Notice. The Contractor’s response shall detail either (a) why they believe that the work was performed in accordance with the contract documents or (b) what corrective action they intend to take, at their sole expense, to correct the non-conforming work.
2. If the Contractor disputes the issuance of the Non-Conforming Notice, the Architect, on behalf of the Owner, has five (5) working days to respond by either (a) withdrawing the Non-Conformance Notice or (b) directing the Contractor to correct such Work. Such determination by the Architect, on behalf of the Owner, shall be final and conclusive.
3. If directed to correct the Work, the Contractor shall do so within five (5) working days after receipt of such direction from the Architect, on behalf of the Owner, or such other time as may be agreed to.

C. Project Communications: Routine written communications between the Architect, Owner, and Contractor which are in writing either as an original document or in electronic format. Such communications shall not be identified as Requests for Information nor shall they substitute for any other written requirement pursuant to the provisions of these Contract Documents.

D. Requests for Information: A request from the Contractor or one of its subcontractors, to the Architect, on behalf of the Owner, seeking an interpretation or a clarification of some requirement of the Contract Documents. The Contractor shall clearly and concisely set forth the issue for which it seeks clarification or interpretation and why a response is needed. The Contractor shall, in the written request, set forth its interpretation or understanding of the contract's requirements along with reasons why it has reached such an understanding.

1. Responses from the Architect, on behalf of the Owner, will not change any requirements of the Contract Documents. Responses to RFI's will be as further defined herein.

1.4 REQUESTS FOR INFORMATION

A. In the event the Contractor or subcontractor, at any tier, determines that some portion of the drawings, specifications, or other contract documents requires clarification or interpretation, the Contractor shall submit a Request for Information in writing. Requests for Information shall only be submitted by the Contractor and shall only be submitted on the Request for Information form provided.

1. The Contractor shall clearly and concisely set forth the issue for which clarification or interpretation is sought and why a response is needed. In the Request for Information, the Contractor shall set forth an interpretation or understanding of the requirement along with reasons why such an understanding was reached.

B. The Architect, on behalf of the Owner, will review all Requests for Information to determine whether they are Requests for Information as defined in the Contract Documents. If it is determined that the document is not an RFI, it will be returned to the Contractor, un-reviewed as to content, for resubmittal on the proper form in the proper manner.

C. Responses to Requests for Information shall be issued within five (5) working days of receipt of the request from the Contractor, unless the Architect determines that a longer time is needed to provide an adequate response. If a longer time is deemed necessary by the Architect, then the Architect shall, within five (5) working days of the receipt of the request, notify the Contractor of the anticipated response time.

1. If the Contractor submits a Request for Information on an activity with five (5) working days or less of float on the current project schedule, the Contractor shall not be entitled to any time extension due to the time it takes the Architect, on behalf of the Owner, to respond to the request provided that the Architect responds within the five (5) working days set forth above.

D. Responses from the Architect, on behalf of the Owner, will not change any requirements of the Contract Documents. In the event that the Contractor believes the response to a Request for Information will cause a change to the requirements of the Contract Documents, the Contractor shall immediately give written notice that the Contractor considers the response to be a Change Order. Failure to give such written notice immediately shall waive the Contractor's right to seek additional time or cost under the provisions set forth in the General Conditions.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012613

SECTION 012614 - REQUEST FOR INFORMATION (RFI) FORM

To: _____ Date: _____

Attention: _____ RFI No. _____

We are this date requesting the following information, clarification or direction:

cc: _____ GC _____ Civil
_____ Owner _____ Structural
_____ Architect _____ MEP
_____ Field _____ Other: _____

Initiated by: _____

Description: _____

_____

Drawing Sheet No(s). _____ Specification Section No. _____

The following information is needed by (date): _____

Question: _____

_____

_____

_____

_____

Proposed Solution: _____

_____

_____

_____

Company: _____ By: _____

Response: _____

_____

_____

_____

Company: _____ By: _____

Date: _____

END OF SECTION 012614

SECTION 012615 - PROPOSAL REQUEST (PR) PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This section includes administration and procedural requirements for Proposal Requests.

B. Measurement and payment criteria applicable to work required.

1.3 DEFINITION

A. A Proposal Request is a written direction in the form of an AIA Document from the Architect, Contractor and Owner used to document changes in scope of work and to identify the cost impact of the change.

1.4 CAUSE FOR PROPOSAL REQUESTS

A. Changes in scope of work may be initiated:

1. As a result of design changes that bear costs in order to complete or enhance the scope of the work resulting in added value to the Owner.
2. As an Owner requested or initiated change in scope that bears cost.
3. To address an unforeseen condition where the correction bears cost. Unforeseen conditions are most generally related to existing site conditions or existing facility conditions that could not have been known at time of Bid as the conditions were clearly unidentifiable.
4. As a value engineering change that reduces cost. The value engineering process identifies alternate ways to provide the required function in a material or system in less time and/or at a lower cost.
5. As a construction change that bears cost. Construction changes are closely related to design changes but are brought to the attention of the Architect by the Contractor through recommendations to improve performance via construction means and methods.

1.5 PROCEDURES

A. The Architect shall issue written direction through a Proposal Request (AIA Document G709-2018) which will include detailed information, drawings or sketches and changes in scope of work to the Contract Document.

B. The Contractor shall review the Proposal Request and submit their cost proposal for the cost related changes.

1. Contractor shall indicate if the cost is an add-to or deduct-from the Contract Sum. Proposal Requests may be issued for deduct cost items as well.

C. The Contractor shall submit their cost proposal within ten (10) working days or state in writing when the proposal will be returned based on the given circumstances. Each proposal shall include a material and labor breakdown for all work performed by their own forces, or subcontractor's forces. Any supporting time sheets for time and material work and subcontractors cost proposals shall be included in the proposal. All of these items shall be included in deduct proposal requests as well.

D. Each proposal issued by the Contractor shall specifically address any required additional or deducted contract time. If no mention is made it is assumed that none is required. No consideration of additional time will be given for previously approved proposals without specific written approval from the Owner or Architect.

E. The maximum aggregate increased cost for combined overhead and profit shall be as noted in the General and Supplementary Conditions. This combined overhead and profit as specified shall be used in deduct proposal requests as well.

F. The value of any scope of work change shall be determined by mutual acceptance of a lump sum, by unit prices or by time and material basis not to exceed plus the appropriate mark-up.

G. The Architect shall review the Contractor's cost proposal and provide a recommendation to the Owner.

H. The Owner reserves the right to reject the Contractor's cost proposal associated with the Proposal Request.

I. The Owner shall review the recommendations of the Architect and if appropriate approve the Contractor's cost proposal. A memorandum shall be issued to the Contractor notifying the Contractor of approval with any clarifications.

J. The approved Proposal Request shall become a part of the contract documentation when issued in a Change Order. The Owner reserves the right to include multiple Proposal Requests in one Change Order.

K. For payment purposes, the Contractor may list each Change Order by number with a listing of each Proposal Request on the schedule of values submitted with each Pay Application. The Owner will pay for approved percentages of each Proposal Request until completed.

L. The Contractor shall carry out the scope of work changes after notification of approval. Work related to the Proposal Request shall be carried out within a reasonable time in order to not delay other work or to cause increased cost because of other work. The Contractor shall have ten (10) working days in which to respond to Proposal Request or to notify the Architect in writing of the date on which the Proposal is anticipated. These requirements apply to deduct proposal requests as well.

M. If the Contractor fails to respond to the Proposal Request or notify the Architect within (10) calendar days, this lack of action shall be construed as no additional cost for the Proposal Request.

N. If the Contractor's cost proposal is rejected by the Architect, all parties shall review the scope of work and cost proposal and agree to an acceptable cost.

O. If the Contractor and Architect can not come to an agreement on an acceptable cost, the Contractor may be directed to proceed with the scope of work changes on a time and material basis not to exceed the Contractor's cost proposal. The Contractor shall be required to submit daily time sheets for the Architect to review and approve. The Owner shall review and approve the final costs upon recommendation of the Architect.

1.6 CHANGE ORDERS

A. The Owner shall assemble the Change Order by Proposal Request or by grouping a number of Proposal Requests.

B. Two original copies of the Change Order shall be printed for signatures. Upon completion of the signature process an original copy will be forwarded to the Contractor.

C. The Contractor shall provide a new non-collusion affidavit with the return of the Change Order after signing.

D. Payment for the Change Order will be possible after signatures are obtained from the Architect, the Contractor and the Owner and upon acceptance by the Owner.

1.7 AS-BUILT DOCUMENTATION

A. It is imperative that the Contractor update their as-built documents in the field for each and every Proposal Request that changes the content of the Document. The Owner reserves the right to inspect the Contractor's as-built document prior to each Pay Application. The status of the Contractor's as-builts may result in withheld payment for that portion of the work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012615

SECTION 013001 - JESSICA LUNSFORD REQUIREMENTS

PART 1 - GENERAL

1.1 JESSICA LUNSFORD ACT

A. The Jessica Lunsford Act ("JLA") was passed by the 2005 Florida Legislature in response to the abduction and killing of Jessica Lunsford in Citrus County. This law, effective September 1, 2005, affects those with a business relationship with school districts in Florida such as the Nassau County School District and affects employees, agents and subcontractors of such businesses as they may present themselves on school sites where students are present, directly interact with students or have access to or control school funds.

B. The JLA was amended in 2013 to create a State Uniform Identification Badge system.

1.2 ADMINISTRATIVE REQUIREMENTS

A. All personnel working on school construction sites in Florida shall have passed a Level 2 screening.

B. All personnel permitted access to school sites in Nassau County shall obtain a red vendor badge issued by Nassau County School District. Badge must be displayed when present on school sites and be kept current (issued within last five years).

C. Possession of a State Uniform Identification Badge may facilitate application for Nassau County School District's red vendor badge, but is not a substitute for the red vendor badge.

D. Fees for Level 2 screenings may be charged by the third-party screening entities. The fees vary by fingerprinting location but generally range from $80 to $90 per candidate and are subject to change without notice. There are no additional fees to apply for the Nassau County School District red vendor badge.

E. Badging process is administered by: Office of Administrative Services, Nassau County School District, Telephone: 904.277.9031.

F. Badging process online information and applications are available: nassau.k12.fl.us/Page/2686.

END OF SECTION 013001

SECTION 013119 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. The Work of this Section shall be included as a part of the Contract Documents of each Contractor on this Project. Where such Work applies to only one Contractor, it shall be defined as to which Contractor the Work belongs.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for project meetings including but not limited to:

1. Pre-Construction Conference.
2. Pre-Installation Conferences.
3. Coordination Meetings.
4. Progress Meetings.

B. Construction schedules are specified in another Division 01 Section.

1.3 PRE-CONSTRUCTION CONFERENCE

A. The Prime Contractor shall schedule a pre-construction conference and organizational meeting at the Project site or other convenient location no later than 15 days after execution of the Agreement and prior to commencement of construction activities. Conduct the meeting to review responsibilities and personnel assignments.

B. Attendees: The Owner, Architect and their consultants, the Contractor and its superintendent, major subcontractors, manufacturers, suppliers and other concerned parties shall each be represented at the conference by persons familiar with and authorized to conclude matters relating to the Work.

C. Agenda: Discuss items of significance that could affect progress including such topics as:

1. Tentative construction schedule.
2. Critical Work sequencing.
3. Designation of responsible personnel.
4. Procedures for processing field decisions and Change Orders.
5. Procedures for processing Applications for Payment.
6. Distribution of Contract Documents.
7. Submittal of Shop Drawings, Product Data and Samples.
8. Preparation of record documents.

9. Use of the premises.

    a. Owner's requirements.

10. Office, work and storage areas.
11. Equipment deliveries and priorities.
12. Safety procedures.
13. First aid.
14. Security.
15. Housekeeping.
16. Working hours.
17. Jessica Lunsford Act

1.4 PRE-INSTALLATION CONFERENCES

A. The Prime Contractor shall conduct a pre-installation conference at the site before each construction activity that requires coordination with other construction. The Installer and representatives of manufacturers and fabricators involved in or affected by the installation, and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Prime Contractor shall advise the Architect of scheduled meeting dates.

1. Review the progress of other construction activities and preparations for the particular activity under consideration at each pre-installation conference, including requirements for:

    a. Contract Documents.
    b. Options.
    c. Related Change Orders.
    d. Purchases
    e. Deliveries.
    f. Shop Drawings, Product Data and quality control Samples.
    g. Possible conflicts.
    h. Compatibility problems.
    i. Time schedules.
    j. Weather limitations.
    k. Manufacturer's recommendations.
    l. Compatibility of materials.
    m. Acceptability of substrates.
    n. Temporary facilities.
    o. Space and access limitations.
    p. Governing regulations.
    q. Safety.
    r. Inspection and testing requirements.
    s. Required performance results.
    t. Recording requirements.
    u. Protection.

2. Record significant discussions and agreements and disagreements of each conference, along with the approved schedule. Distribute the record of the meeting to everyone concerned, promptly, including the Owner and Architect.
3. Do not proceed if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of Work and reconvene the conference at the earliest feasible date.

1.5 COORDINATION MEETINGS

A. The General Contractor shall conduct Project coordination meetings at regularly scheduled times convenient for all parties involved. Project coordination meetings are in addition to specific meetings held for other purposes, such as regular progress meetings and special pre-installation meetings.

B. Request representation at each meeting by every party currently involved in coordination or planning for the construction activities involved.

C. Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

1.6 PROGRESS MEETINGS

A. The General Contractor shall conduct progress meetings at the Project site no less frequently than monthly. Notify the Owner and Architect of scheduled meeting dates. Coordinate dates of meetings with preparation of the payment request.

B. Attendees: In addition to representatives of the Owner and Architect, each Contractor, subcontractor, supplier or other entity concerned with current progress or involved in planning, coordination or performance of future activities shall be represented at these meetings by persons familiar with the Project and authorized to conclude matters relating to progress.

C. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the current status of the Project.

1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
2. Review the present and future needs of each entity present, including such items as:

    a. Interface requirements.
    b. Time.
    c. Sequences.
    d. Deliveries.

e. Off-site fabrication problems.
f. Access.
g. Site utilization.
h. Temporary facilities and services.
i. Hours of Work.
j. Hazards and risks.
k. Housekeeping.
l. Quality and Work standards.
m. Change Orders.
n. Documentation of information for payment requests.

D. Reporting: No later than 3 days after each progress meeting date, the Contractor shall have prepared and distribute copies of minutes of the meeting to each party present and to other parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.

1. Schedule Updating: Revise the construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 013119

SECTION 013300 - SUBMITTALS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

B. The Work of this Section shall be included as a part of the Contract Documents of each Contractor on this Project.

1.2 SUBMITTAL PROCEDURES

A. Submittals, including those specified herein to be submitted to the Architect, excluding those directed to a specific individual, shall be submitted directly to the General Contractor for his review. General Contractor will forward required submittals to the Architect for his review.

B. Contractors on this Project shall provide submittals in accordance with the requirements of this Section. Where a submittal is required by a Contractor but also requires assistance from others, Contractors shall participate and cooperate to expedite each submittal.

C. Where submission of samples, shop drawings, or other items are required from suppliers or subcontractors, it shall be the responsibility of the Contractor for whom the subcontractor is executing the Work to see that the submittal items required are complete and properly submitted, and corrected and resubmitted at the time and in the order required so as not to delay the progress of the Work. Submittals shall be made through the Contractor.

D. The Contractor shall check shop drawings, samples, and other submittals and submit them to the Architect with a letter of transmittal giving his approval, comments, and suggestions. Each transmittal shall include the following information:

1. Date Submitted.
2. Project title and number.
3. Contractor's name and address.
4. Identification by Specification Section and quantity submitted for each submittal including name of subcontractors, manufacturer, or supplier. Notation shall be included to indicate number of revisions to submittal.
5. Notification of deviations from the Contract Documents for each submittal.
6. Contractor's written approval marked on each submittal. If contractor’s submittals are not stamped and reviewed by the contractor prior to submitting for review, submittals will be sent back to the contractor.
7. If there is more than one building in the project, shop drawings are to be submitted and packaged for each building and submitted in packages for each separate building. Shop drawings not submitted in this fashion, may be rejected.

E. The Contractor shall prepare, review, comment, stamp with his approval and submit, with reasonable promptness or within the specified time periods and in orderly sequence so as to cause no delay in the Work or in the Work of another contractor, submittals required by these Contract Documents or subsequently required by modifications.

1. If the product is not as specified or approved by Addenda, it will be rejected by the Architect. Contractor shall not make submittals if the product manufacturer is not specified or listed in the Addenda. This will delay the submittal process and the contractor shall assume full responsibility for any delays caused by unapproved manufacturer submittals.

F. The General Contractor and Architect shall review and take action on submittals with reasonable promptness, so as to cause no delay in the progress. A reasonable period of time for review of and action taken on submittals shall be as specified herein, but in no case shall it be more than 14 calendar days from the time it is received by the Architect until the time the submittal is marked and forwarded or returned. Contractors shall allow sufficient mailing time for submittals.

G. The same submittal will only be reviewed a maximum of two (2) times without cost to the Contractor. If the same submittal is not correct within the two (2) submittal limit for the same item, the Contractor will be charged for the additional reviews required. The Architect's additional time will be on an hourly basis, which amount will be deducted from the Contractor's Contract Sum by Change Order.

H. Identification of Submittals: Submittals, including re-submittals, shall be numbered with a Submittal Number. The Submittal Number shall consist of the applicable specification section number followed by a suffix number in consecutive order starting with 001. Additional submittals for the same specification section are to be numbered consecutively 002, 003, etc. The form of Submittals Numbers shall be as follows: ###### - ### (example: 099108-001). Re-submittal Submittal Numbers shall consist of the previously used Submittal Number plus an alphanumeric suffix for the re-submittal. (Example: 099108 – 001R1). R1 indicates the first re-submittal, R2 indicates the second re-submittal, etc.

1.3 REQUIRED SUBMITTALS

A. List of Subcontractors, Suppliers, and Manufacturers

1. The apparent low Contractor shall submit, to the Architect, a list of Contractors, subcontractors, suppliers, and manufacturers furnishing and installing materials and products specified on this Project. A List of Subcontractors shall be submitted with bid – a complete list within three (3) calendar days of issuance of Notice to Proceed – refer to Section 004000 Bid Form and Section 004001 Subcontractor List. The list shall be complete with names, street addresses, city, state, and zip code. List shall be complete including requested subcontractors, suppliers, and manufacturers of materials and equipment on which the bid is based.

2. The General Contractor shall submit to the Architect and the Subcontractors a complete master list of shop drawings and samples, including products and colors that will be required as submittals on this Project. The Contractor shall complete the form as submitted and return same to the General Contractor. Completeness and prompt return of this information is critical to making final color selections by the Architect.

    a. All required shop drawings and submittals shall be submitted within 60 days of initial request.

3. In addition to the names of subcontractors, suppliers, and manufacturers, the Contractor shall be aware of the required dates that shop drawings and samples are to be submitted for approval and the critical date for delivery. Dates submitted for shop drawings and samples shall be realistic and be coordinated with the Progress Schedule for critical dates that affect the progress of construction.

B. Construction Schedules

1. A linear bar chart time control schedule shall be provided by the General Contractor.

    a. Each Contractor shall work overtime, nights, and weekends, if necessary to maintain his portion of the schedule. Such overtime, night, and weekend work will be at no additional cost to the Owner.
    b. Each Contractor is responsible to expedite approvals and deliveries of material so as not to delay job progress.
    c. Each Contractor shall begin each phase of his work as quickly as physically possible, but not to impede or jeopardize the Work of other Contractors.
    d. Each Contractor shall cooperate fully with the General Contractor in the coordination of the Work with other Contractors and the convenience of the Owner as indicated in the Specifications.
    e. Each Contractor shall participate in the updating of the schedule on a monthly basis during the entire life of his contract. Contractor's schedule shall be updated monthly and submitted to the Architect and other involved parties at least 2 days prior to the monthly progress meeting.
    f. The Project Construction Schedule will be updated reflecting Contractor's revised schedule and progress meeting results.

C. Schedule of Values

1. Contractor shall prepare and submit to the Architect a Schedule of Values for approval within 7 days after notice is given to proceed with Work. The Schedule of Values shall consist of a complete breakdown of the Contractor's contract sum showing the various items of the Work, divided so as to facilitate the approval of payments to the Contractor for Work completed. In addition to and conjunctive with the division of various items of work, the breakdown shall separate individual buildings within the Project, shall separate sitework from building(s) components and shall separate remodeling/renovation work from new construction work. The Schedule of Values shall be prepared on AIA Document G703, Continuation Sheet, showing the breakdown of items of Work and supported by such data to substantiate its correctness as the Architect may require.

2. The contract breakdown shall be the same form as that to be used in submitting request for payments as covered by Article 9.3, Applications for Payment, of the General and Supplementary Conditions. Each item of work shall have indicated a separate cost for labor and material. This schedule when approved by the Architect shall be used as the basis of approving payments along with establishing percentages of Work complete.
3. Schedule of Values shall be coordinated with the Construction Schedules such that the percentages of Work completed closely relates to the values for the Work shown on the request for payments. At the beginning of the Project, each Contractor shall prepare a schedule of monthly progress payments showing the amount the Contractor may require for the Work proposed to be completed. The purpose of this schedule is to allow the Owner to determine what amounts of funds he will be required to have available each month during the progress of construction for progress payments.

D. Project Use Site Plan

1. The General Contractor, in cooperation with other Contractors on this Project, shall prepare a proposed project use of the site plan and shall consider the Phasing of the Project in doing so.
2. Contractors shall confine operations at the site to areas within the areas indicated and as approved on the use of the site plan, and as permitted by law, ordinances, and permits. Site shall not be unreasonably encumbered with materials, products, or construction equipment.

E. Shop Drawings and Product Data

1. Shop drawings are drawings, diagrams illustrations, schedules, performance charts, brochures, and other data which are prepared by the Contractor or subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

    a. Advertising brochures will not be accepted as shop drawings.
    b. Erection and setting drawings as referred to in these Specifications will be considered as shop drawings and shall be submitted along with detailed shop drawings.
    c. Where schedules are required to indicate locations, they shall be submitted as part of the shop drawing package for that item.
    d. Shop drawings and schedules shall repeat the identification shown on the Contract Drawings.

2. Product data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate a material, product, or system for some portion of the Work.

    a. Clearly mark each copy to identify pertinent materials.
    b. Show dimensions and clearance required.
    c. Show performance and characteristics and capacities.
    d. Show wiring diagrams and controls.
    e. Note variances from the Contract Documents including manufacturer's recommended changes to sequencing and to piping and control diagrams.

3. Preparation of Submittals: Provide permanent marking on each submittal to identify project, date, Contractor, Subcontractor, submittal name, and similar information to distinguish it from other submittals. Show Contractor's executed review and approval marking and provide space for Architect's "Action" marking. Package each submittal appropriately for transmittal and handling. Submittals which are received from sources other than through the Contractor will be returned "without action", which does not mean approval.
4. By approving and submitting shop drawings, the Contractor thereby represents that he has determined and verified field measurements, field construction criteria, materials, catalog numbers, and similar data, and that he has checked and coordinated each shop drawing with the requirements of the Work and of the Contract Documents prior to submitting to the Architect.
5. The Contractor shall make corrections required by the Architect and shall resubmit the required number of corrected copies of shop drawings until approved. The Contractor shall direct specific attention in writing or on resubmitted shop drawings to revisions other than the corrections requested by the Architect on previous submissions.
6. The Architect will review shop drawings only for conformance with the design concept of the Project and with the information given in the Contract Documents. The Architect's review of a separate item shall not indicate review of an assembly in which the item functions.
7. The Architect's review of shop drawings shall not relieve the Contractor of responsibility for any deviation from the requirements of the Contract Documents unless the Contractor has informed the Architect in writing of such deviation at the time of submission and the Architect has given written approval to the specific deviation, nor shall the Architect's action relieve the Contractor from responsibility for errors or omissions in the shop drawings.
8. Notations and remarks added to shop drawings by the Architect are to insure compliance to Drawings and Specifications and do not imply a requested or approved change to contract cost.
9. Should deviations, discrepancies, or conflicts between shop and contract drawings and Specifications be discovered, either prior to or after review, Contract Documents shall control and be followed.
10. The following number of shop drawings and product data submittals shall be made on this Project. Where an insufficient number of copies are submitted, no action will be taken until proper number of copies have been received. Additional copies beyond the number required will be discarded.

    Schedule of Required Shop Drawings and Product Data

    a. Architectural/Structural/Mechanical/Electrical/Civil

        (1) Submit to the Architect: 1 PDF via email or 1 CD with shop drawings.
        (2) Distribution: All Shop Drawings and Product Data Submittals will be returned by Architect as PDFs by email or FTP site.
        (3) Owner requires 1 electronic copy of all submittals to be transmitted to the Owner by the Contractor at the same time the Contractor transmits to Architect.

b. Shop drawings will be marked as follows: Contractors shall take the following action for each respective marking:

(1). "NO EXCEPTION TAKEN" - Copies will be distributed as indicated under above schedule.
(2). "MAKE CORRECTIONS NOTED" - Contractor may proceed with fabrication, taking into account the necessary corrections.
(3). "REVISE AND RESUBMIT" - Contractor will be required to resubmit shop drawings in their entirety. No fabrication or installation shall be started until shop drawings so marked have been completely revised, resubmitted, and marked by Architect according to preceding Paragraphs 1 or 2.
(4). "SEE ATTACHED COMMENTS" – Separate comments from the Architect or consultants have been attached to the shop drawing transmittal. These comments should be considered as an integral part of the response.
(5) "REJECTED" – Information provided does not meet the requirements of the Contract Documents. Resubmit based on comments and Contract Documents.

c. Where resubmittal is required, submittal and distribution shall be as specified in subparagraph 10 above.
d. One set of shop drawings marked by Architect "NO EXCEPTION TAKEN" to be filed on the project site at all times. Shop drawing file may be electronic and accessible by the Architect and Owner on the on-site project computer. No installation of equipment, materials, or products is to be incorporated into the Project until shop drawings marked by Architect "NO EXCEPTION TAKEN" have been received on the Project.

11. All exterior envelope product submittals requiring Florida Product Approval (FS 553.842) shall be submitted with the required product number attached. The Contractor shall develop a spreadsheet indicating all such products and submit for review and approval by the Architect no less than 90 days prior to Substantial Completion**.**

F. Samples

1. The Contractor shall submit to the Architect triplicate (3) samples to illustrate materials or workmanship, colors, and textures, and establish standards by which the Work will be judged. A complete list of required samples will be submitted to the Contractor for use as a check list.
2. By approving and submitting samples, the Contractor thereby represents that he has determined and verified materials, catalog numbers, and similar data, and that he has checked and coordinated each sample with the requirements of the Work and of the Contract Documents prior to submitting to the Architect.
3. The Contractor shall resubmit the required number of correct or new samples until approved. The Contractor shall direct specific attention in writing or on resubmitted samples to revisions other than the changes requested by the Architect on previous submissions.

4. The Architect will review samples but only for conformance with the design concept of the Project and with the information given in the Contract Documents. The Architect's approval of a separate item shall not indicate approval of an assembly in which the item functions.
5. The Architect's action shall not relieve the Contractor of responsibility for deviations from the requirements of the Contract Documents unless the Contractor has informed the Architect in writing of the deviation at the time of submission and the Architect has given written approval to the specific deviation, nor shall the Architect's action relieve the Contractor form responsibility for errors or omissions in the samples.
6. Unless otherwise specified, samples shall be in triplicate and of adequate size to show function, equality, type, color, range, finish, and texture of material. When requested, full technical information and certified test data shall be supplied.

    a. Each sample shall be labeled, bearing material name and quality, the Contractor's name, date, project name, and other pertinent data.
    b. Transportation charges to and from the Architect's office must be prepaid on samples forwarded. Approved samples shall be retained by the Architect until the Work for which they were submitted has been accepted.

7. Materials shall not be ordered until approval is received. Materials shall be furnished, equal in every respect to approved samples. Where color or shade cannot be guaranteed, the maximum deviation shall be indicated by the manufacturer. Work shall be in accordance with the approved samples.

G. List of AIA Documents (Contractor's Source)

8. The following documents are required in the Project Manual to be furnished and executed by the Contractor(s) and submitted to the Architect at various stages of the Project Work. Refer to Division 1 and Supplementary Conditions.

    G702 - Application and Certification for Payment
    G703 - Continuation Sheet
    G705 - Certificate of Insurance
    G706 - Contractor's Affidavit of Payment of Debt and Claims
    G706A - Contractor's Affidavit of Release of Liens
    G707 - Consent of Surety Company to Final Payment, if required
    G707A - Consent of Surety to Reduction in or Partial Release of Retainage, if required.

9. Special documents, which may be required, will be furnished by the Architect.

H. Operation and Maintenance Data

1. Typed or printed instruction covering the operation and maintenance of each item of equipment furnished shall be prepared and placed in a notebook by the Contractor and submitted to the Architect for review and subsequently transmit to the Owner. The instructions, as applicable, shall include the following:

a. Any schematic piping and wiring diagrams;
b. Any valve charts and schedules;
c. Any lubrication charts and schedules;
d. Guides for troubleshooting;
e. Pertinent diagrams of equipment with main parts identification;
f. Manufacturer's data on all equipment;
g. Operating and maintenance instructions for all equipment;
h. Manufacturer's parts list; and,
i. Any testing procedures for operating tests.

(1) Three (3) copies of the above instruction books shall be furnished prior to Final Payment. Books shall describe information to be covered clearly, in detail and shall be in form and content satisfactory to Owner.

2. The Contractor shall instruct the Owner's operating personnel in the proper use, care and emergency repair of all equipment installed before Final Payment. The Contractor shall call particular attention to any safety measures that should be followed. The instruction shall be adequate to train the Owner's operating personnel in the proper use, care and emergency repair of such equipment.

I. The work shall be furnished and installed in accordance with the Drawings, Specifications and as additionally required by the manufacturer's instructions, and where a conflict occurs between the Drawings or Specifications and the manufacturer's instructions, the Contractor shall request clarification from the Architect prior to commencing the work and shall follow the interpretations given by the Architect.

1.4 MATERIAL SAFETY DATA SHEETS

A. In compliance with the OSHA Standard 1910.1200 – Hazard Communication (March 26, 2012). Contractors are required to have on the site, MSDS (Material Safety Data Sheets) for all products classified as hazardous that their firm will be furnishing, using, or storing on the jobsite during the duration of this Project. MSDS sheets are not part of the shop drawing review process.

1. The Contractor at completion of the Work shall provide the Owner with the MSDS sheets for the hazardous products used on the Project site during construction.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013300

SECTION 013400 - DIRECT PURCHASE PROCEDURES

PART 1 - GENERAL

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

1.2 The Owner is exempt from sales tax on the purchase of construction materials. The Owner has elected to exercise their right to purchase directly various construction materials, supplies and equipment that may be a part of this Contract. Such direct purchases shall be without any additional cost to the Owner. The Owner will, via Construction Purchase Orders (CPO), purchase the materials and the Contractor shall assist the Owner in the preparation of the purchase orders. The materials shall be purchased from the Vendors selected by the Contractor for the price originally negotiated by the Contractor.

1.3 The Contract Amount shall be reduced by the net, undiscounted amount of the purchase orders plus all sales taxes. This reduction in the Contract Amount will occur through Deductive Change Order, which will reference the CPO(s) affecting the change.

1.4 Issuance of CPO by the Owner shall not relieve the Contractor of any responsibilities regarding material purchases or installations, with the exception of the payments for the materials as purchased. The Contractor shall remain fully responsible for coordination, quantities ordered, submittals, protection, storage, scheduling, shipping, security, expediting, receiving, installation, cleaning and all applicable warranties. The Contractor must maintain a Builder's Risk policy to include materials stored on-site and materials installed on site.

1.5 All bids are to be submitted with all applicable taxes included.

1.6 No payment will be made for materials stored off-site. Payment is contingent on the receipt of properly verified and approved delivery tickets.

1.7 Terms: For the purpose of this Section the following terms will be defined:

A. Material: Any material, supplies or item of equipment intended for permanent installation in the Project.

B. Vendor: A company supplying materials to the Project, whether such provision includes installation or not.

C. List of Vendors: A list of Vendors whose materials are required for the construction of the Project and which is submitted to the Owner by the Contractor for approval.

D. Vendor Purchase Order (VPO): A material list and price quote by a Vendor required for issuance of a Construction Purchase Order by the Owner.

E. Construction Purchase Order (CPO): An authorization issued by the Owner for the supply of stated materials and agreement to pay quoted price for material upon verification of delivery.

F. Delivery Ticket: A receipt issued by the Vendor on a business-like form indicating the date, quantity, and type of materials delivered to the site and referencing a Vendor's invoice or the Construction Purchase Order.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 LIST OF ITEMS TO BE DIRECT PURCHASED:

All materials, supplies or equipment that have a total or aggregate cost of $3,500.00 or more.

3.2 Within ten (10) days of executing the Agreement, the Contractor shall submit a List of Vendors and materials for the items listed above to the Owner. The list shall contain the following information:

A. Vendor's full business name, physical address and remittance address (if different).

B. Vendor's agent assigned to the Project.

C. Vendor agent's business telephone number, fax number and email address.

D. Materials the Vendor will supply.

3.3 Upon approval by the Owner, each Subcontractor, or Vendor if no Subcontractor is involved in the installation of the material, shall issue a Vendor's Purchase Order (VPO) addressed to the Owner and submitted to the Contractor for review and approval prior to submission to the Owner's representative. The VPO shall contain the following minimum information:

A. Date of issuance.

B. Project name and location.

C. Vendor's full business name.

D. Vendor's full business address.

E. Vendor's business telephone number and fax number.

F. Description of materials.

G. Quantity of each material.

H. Unit cost of each material.

I. Extended price of each material (quantity multiplied by unit cost).

J. Sales tax on materials.

K. Any applicable shipping and handling charges.

L. Total price (extended prices plus sales tax, shipping and handling charges).

M. Signature and printed/typed name of authorizing agent for the Subcontractor or Vendor.

3.4 The Owner will issue a CPO in the amount of the VPO less the sales tax. The CPO will contain the following minimum information:

A. Date of issuance.

B. Project name and location.

C. Vendor's full business name.

D. Vendor's full business address.

E. Reiteration of the authorized quantity, material, description, unit cost, and extended price for each material.

F. Shipping and handling charges.

G. Total price.

H. Signature and printed or typed name of approving agent for the Owner,

I. Signature and printed or typed name of authorizing agent for the Owner.

The CPO will be sent directly to the Contractor with a copy retained by the Owner and copy sent to the Architect. Contractor shall provide copy for the Subcontractor and / or Vendor as applicable.

3.5 Upon receipt of the CPO by the Vendor, the Vendor shall issue an invoice to the Owner for payment on materials. The Contractor shall ensure Vendor clearly references the CPO number on the invoice.

3.6 All materials are to be received on the Construction Site with the Vendor's delivery ticket. Delivery tickets are to be collected, verified as to accuracy, quantity and product, and signed by the Contractor, or the Contractor's on-site representative. Contractor shall make delivery tickets available for the Owner's representative upon request. All delivery tickets are to be sealed in an envelope with the delivery date neatly printed on the front of the envelope.

3.7 The Owner will issue payment to the Vendor for the amount of the Vendor's invoice upon receipt of the verified delivery tickets. The Owner shall provide a payment schedule to the Contractor and any Subcontractor or Vendor upon request. In order to maintain timely payments, it will be the responsibility of the Subcontractor/Vendor and the Contractor to process delivery tickets in accordance with the payment schedule. Upon payment of invoice, the Owner will provide a list of payments to the Architect and Contractor.

3.8 Examples of the following forms are included in this Section:

A. List of Vendors

B. Vendor Purchase Order

[THIS AREA INTENTIONALLY BLANK]

Nassau County School District
NCSD Project No. 98960-221
Classroom Building Addition – Yulee Middle School

VENDOR PURCHASE ORDER

Architect: R. Dean Scott, Architect, Inc.
Contractor: _____
Sub-Contractor: _____
Vendor P. O. Number: _____
Vendor Telephone: _____
Vendor Fax: _____
Vendor Agent: _____

Date: _____
Page _____of_____
Vendor Name: _____
Remittance Address: _____
_____
_____
Vendor Agent Email: _____

Quantity	Description of Material	Unit Cost	Price
THIS PURCHASE ORDER IS TO REQUEST A CONSTRUCTION PURCHASE ORDER ONLY. LUMP SUM PRICES/ORDERS ARE NOT ACCEPTABLE. VENDOR MUST SEND INVOICE AND DELIVER MATERIALS TO SITE TO RECEIVE PAYMENT. PLEASE TYPE OR PRINT CLEARLY.		Subtotal	
		Sales Tax	
		Shipping/ Handling	
		Total	

_____
(Print Name)

_____
(Signature)

Authorized agent for Sub-contractor/Vendor

_____
(Print Name)

_____
(Signature)

Authorized agent for Contractor

Nassau County School District
NCSD Project No. 98960-221
Classroom Building Addition – Yulee Middle School

LIST OF VENDORS

Date: _____ Page _____ of _____

Contractor: _____

VENDOR / AGENT	AGENT PHONE / FAX	AGENT EMAIL	PHYSICAL & REMIT ADDRESSES	MATERIALS

END OF SECTION 013400

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, Commissioning Authority, or authorities having jurisdiction are not limited by provisions of this Section.

1.3 DEFINITIONS

A. Basis of Design: When used in conjunction with a specific manufacturer and/or specific product from a specific manufacturer it shall mean that this manufacturer / product is intended to establish a minimum standard for experience, quality, function, appearance and / or related characteristics. It is not intended to limit available manufacturers or product selections unless specifically indicated. Demonstrably equivalent products from other manufacturers with equivalent experience shall be considered during the submittal phase. Pre-approvals are not required prior to bid unless otherwise indicated. Where substitutions will not be allowed, such will be indicated in Contract Documents.

B. Commissioning Authority (CxA): Entity or individual responsible for the delivery of the commissioning process. CxA will be engaged directly by Owner unless otherwise indicated. Contractor shall cooperate with CxA to facilitate the CxA’s delivery of the commissioning process. The commissioning process is required by the Florida Building Code (Seventh Edition) and Owner is voluntarily complying with Florida Green Building Coalition’s Green Commercial Building Standard which include several commissioning related pre-requisites and options.

C. Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of five previous projects similar in nature, size, and

extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

D. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

E. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.

1. Use of trade-specific terminology in referring to a Work result does not indicate that certain construction activities specified apply exclusively to specific trade(s).

F. Mockups: Physical assemblies of portions of the Work constructed to establish the standard by which the Work will be judged. Mockups are not Samples.

1. Mockups are used for one or more of the following:

a. Verify selections made under Sample submittals.
b. Demonstrate aesthetic effects.
c. Demonstrate the qualities of products and workmanship.
d. Demonstrate successful installation of interfaces between components and systems.
e. Perform preconstruction testing to determine system performance.

2. Product Mockups: Mockups that may include multiple products, materials, or systems specified in a single Section.
3. In-Place Mockups: Mockups constructed on-site in their actual final location as part of permanent construction.

G. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.

H. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

I. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).

J. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" has the same meaning as the term "testing agency."

K. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work, to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

L. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work, to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect.

1.4 DELEGATED DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated Design Services Statement: Submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.5 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Architect regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Architect for clarification before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified is the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.6 INFORMATIONAL SUBMITTALS

A. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

B. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Entity responsible for performing tests and inspections.
3. Description of test and inspection.
4. Identification of applicable standards.
5. Identification of test and inspection methods.

6. Number of tests and inspections required.
7. Time schedule or time span for tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

C. Reports: Prepare and submit certified written reports and documents as specified.

D. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.7 REPORTS AND DOCUMENTS

A. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement of whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

B. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.
3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement of whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

1.8 QUALITY ASSURANCE

A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to

meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that is similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities be performed by entities who are recognized experts in those operations. Specialists will satisfy qualification requirements indicated and engage in the activities indicated.

1. Requirements of authorities having jurisdiction supersede requirements for specialists.

G. Testing and Inspecting Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented in accordance with ASTM E329, and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect, demonstrate, repair, and perform service on installations of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups of size indicated.
2. Build mockups in location indicated or, if not indicated, as directed by Architect.
3. Notify Architect seven days in advance of dates and times when mockups will be ready for review.
4. Employ supervisory personnel who will oversee mockup construction. Employ workers who will be employed to perform same tasks during the construction at Project.
5. Demonstrate the proposed range of aesthetic effects and workmanship.
6. Obtain Architect's approval of mockups before starting corresponding Work, fabrication, or construction.

    a. Allow seven days for initial review and each re-review of each mockup.

7. Promptly correct unsatisfactory conditions noted by Architect's preliminary review, to the satisfaction of the Architect, before completion of final mockup.
8. Approval of mockups by the Architect does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
9. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
10. Demolish and remove mockups when directed unless otherwise indicated.

1.9 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
2. Costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor.
3. Owner plans to directly engage firms to provide the following services related to Quality Control:

    a. Commissioning Authority: To guide installation and start-up of various HVAC, plumbing and electrical systems.
    b. Test and Balance Verification Agency: For independent verification of testing, balancing and adjusting of HVAC systems performed by the Contractor.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Engage a qualified testing agency to perform quality-control services.

    a. Contractor will not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

D. Testing Agency Responsibilities: Cooperate with Architect, Commissioning Authority and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect, Commissioning Authority, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform duties of Contractor.

E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 Submittals.

F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

G. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspection equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's Construction Schedule. Update and submit with each Application for Payment.

1. Schedule Contents: Include tests, inspections, and quality-control services, including Contractor- and Owner-retained services, commissioning activities, and other Project-required services paid for by other entities.
2. Distribution: Distribute schedule to Owner, Architect, Commissioning Authority, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's, Commissioning Authority's, and reference during normal working hours.

1. Submit log at Project closeout as part of Project Record Documents.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspection, sample-taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 014200 - CODES AND STANDARDS

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes information regarding applicable Codes and Standards.

1.2 SUBMITTALS

A. General: Submit manufacturer's standard data, drawings, and/or samples as required in the specific Specification Section that defines the Work.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION

3.1 GENERAL REQUIREMENTS

A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed.

1. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

B. Work shall be in strict compliance with applicable codes and standards, and with requirements of authorities having jurisdiction.

3.2 CODES AND STANDARDS SCHEDULE

A. Work of this Project shall comply with all applicable Codes and Standards in effect at the time of performance of the Work of this Project. Applicable editions and updates are as indicated. Where edition is not indicated, most recent edition will apply. Codes include, but are not necessarily limited to, the following:

1. Florida Building Code – Building – Seventh Edition
2. Florida Building Code – Plumbing – Seventh Edition
3. Florida Building Code – Mechanical - Seventh Edition
4. Florida Building Code – Fuel Gas – Seventh Edition
5. Florida Building Code – Accessibility – Seventh Edition
6. Florida Building Code – Energy Efficiency – Seventh Edition
7. Florida Fire Prevention Code, Seventh Edition
8. State Requirements for Educational Facilities – 2014
9. Florida Administrative Code (FAC).
10. ASCE/SEI 7-16 Minimum Design Loads for Buildings and Other Structures including Supplement No. 1.

11. NFPA 70-17 National Electrical Code.
12. NFPA 72-16 National Fire Alarm and Signaling Code.
13. NFPA 101-18 Life Safety Code.
14. Florida Statutes Section 553.842 – Product Evaluation and Approval

B. Entities that are quasi-legislative in nature and that issue rules, codes, declaratory statements and other clarifications that may affect the Work are as follows:

1. Florida Department of Business and Professional Regulation (DBPR).
2. Department of Community Affairs (DCA).
3. Florida Building Commission.
4. Florida Department of Education (DOE).
5. Florida Green Building Coalition (FGBC).

C. All interior wall and ceiling finishes shall meet the requirements of Chapter 12, Article 12.5 of the Florida Fire Prevention Code – Seventh Edition.

D. Refer to Structural Drawings for General Notes concerning all structural loads, including lateral and wind loads. For each product provided in the building envelope, provide the applicable Product Approval Number for the manufacturer or certify the product as installed conforming to the FBC in accordance with Florida Statutes Section 553.842 or a rational analysis by a qualified licensed architect or engineer.

E. This Project has been designed and shall be constructed to satisfy the Florida Green Building Coalition – Green Commercial Building Standard - Bronze Level, though actual certification shall not be sought. The Contract Documents include the requirements necessary to meet or exceed this certification level throughout their contents. Refer to Section 014201, FGBC Owner's Project Requirements (OPR) and Section 014202 FGBC Basis of Design (BOD).

END OF SECTION 014200

SECTION 014201 FGBC - OWNER'S PROJECT REQUIREMENTS (OPR)

A. Author: R. Dean Scott, Architect, Inc. (RDSA).

B. Owner: Nassau County School District (NCSD).

C. Standards Publisher: Florida Green Building Coalition (FGBC).

D. Referenced Standard: Florida Green Commercial Building Standard, Version 3 (June 1, 2019).

E. Project Name: Classroom Building Addition at Yulee Middle School.

F. General Goals:

1. Overall goal to develop facilities that align with Owner's core mission of fostering student success.
2. Owner's Project Requirements (OPR) is a living document that details Owner's expectations throughout the building design, construction and operation phases as related to identification and implementation of environmentally healthy and sustainable strategies. The OPR is considered a living document as the Owner is willing to modify previous decisions when additional information becomes available that leads to more appropriate choices.
3. Owner is committed to compliance with code requirements for environmentally friendly construction.
4. Owner and design team selected FGBC's Green Commercial Building Standards as the nationally recognized high-performance green building rating system for this project.
5. OPR outlines Owner's and design team's approach to meeting the selected standard.

G. Owner Expectations:

1. Buildings and site provide safe, healthy, energy-efficient environments for students, staff and visitors.
2. Utilization of energy-efficient systems balanced with the need for durability and ease of maintenance.
3. Maximizing passive design strategies for compliance over mechanical methods.

H. Project Description:

1. Addition of one classroom building and site improvements to existing plant.
2. Existing school plant:
    a. Serves grades 6, 7 and 8 including ESE.
    b. Yulee Middle School shares a 99 acre site with adjacent Yulee High School.
3. Proposed Building:
    a. Middle school classrooms, science lab and science demonstration classrooms.
    b. Support spaces (teacher planning/mechanical/electrical/systems/custodial).
    c. Circulation spaces (corridors).
    d. Approximately 27,100 sf of new building area housing 374 student stations.
4. Proposed Site Improvements:
    a. Exterior circulation system comprised of covered and uncovered walkways.
    b. Addition of third chiller to existing central energy plant containing two existing chillers.
    c. Utility extensions to serve new building.
    d. Trees and landscaping.

e. New and reconfigured existing stormwater management facilities.
f. Adding internal driveways on site to facilitate vehicle circulation.
g. New batting cage for softball facility.

5. The new and existing buildings will be occupied during school days for instructional purposes.
6. The new and existing buildings may be occupied at other times for community uses.

I. Objectives:

1. Project Time and Project Budget: Project shall be completed and ready to accept students prior to or during the 2022-2023 school year. Given limited financial resources, it is essential that the project be completed within the established budget as provided by the Owner.
2. Safety and Security: Safety and security are of prime importance. Emphasis shall be placed on the design and functionality of all systems related to the safety and security of students, staff and visitors both inside and outside of the building. Functional security and video surveillance monitoring will be provided. Site will be partitioned into open access areas and controlled access areas. Building access will be controlled and monitored at all times.
3. Healthy Indoor Environment: Indoor environmental quality (IEQ) levels that improve occupant health and support high quality learning via proper thermal, visual and acoustic conditions.
4. Operation / Cost: Systems and equipment should be selected with a strong focus on:
   a. Simple operation.
   b. Long-term reliability.
   c. Ease of maintenance.
   d. Low cost of operation.
   e. Low life cycle costs.

J. Green Project Meeting:

1. Green Project Meeting was held on February 3, 2021. The meeting satisfied FGBC requirements for Category 1: Project Management, Prerequisite (“PR”) 1.
2. FGBC project goal was established as “Bronze” (0-30 points over adjusted minimum total) although goal may be exceeded.
3. Project will be designed to meet FGBC minimum requirements. Project will not be submitted for actual certification.
4. FGBC checklist indicating issues to be addressed and points targeted is as indicated below:

CATEGORY 1: PROJECT MANAGEMENT

				Points Available	Points Targeted	Point Differential	Comments
PM	PR1		Green Project Meeting	0	√		
PM	1		Building Information Modeling (BIM)	5			
PM	2		Cost Benefit Analysis	5			
PM	3		Green Education	1	1		
			Required Category Minimum:	0	1	1	

CATEGORY 2: ENERGY

				Points Available	Points Targeted	Point Differential	Comments
E	PR1		Owner Project Requirements (OPR)	0	√		
E	PR2		Basis of Design (BOD)	0	√		
E	PR3		Testing and Balancing of Installed Equipment	0	√		
E	PR4		Minimum Energy Performance	0	√		
E	PR5		CFC Reduction in HVAC Equipment	0	√		
E	1	.01	EPA Target Finder: Input Building Information	1			
E	2	.01	Portfolio Manager: Input Building Information	1			
E	2	.02	Portfolio Manager: FGBC Access	1			
E	3	.01	Commissioning: Fundamental Building Systems	4	4		
E	3	.02	Commissioning: Advanced Building Systems	5			
E	3	.03	Commissioning: Additional Building Systems	1			
E	4		Energy Performance Improvement	0-60	10		
E	5		Renewable Energy Production	1-28			
E	6		Green Power	1,2,3			
E	7		Daylight Sensors	1,2	2		
E	8		Occupancy Sensors	1,2	2		
E	9		Interior Lighting	1	1		
E	10		Lighting Power Density	5	3		
E	11		Exterior Lighting Efficiency	3	3		
E	12		Solar Study of Building	2			
E	13		Energy Monitoring Interface	10	10		
			Required Category Minimum:	30	35	5	

CATEGORY 3: WATER

				Points Available	Points Targeted	Point Differential	Comments
W	PR1		No Invasive Plants	0	√		
W	PR2		Separate Irrigation Zones – Turf & Beds	0	√		
W	PR3		Rain Shut off Device	0	√		
W	PR4		Drought Tolerant Landscape	0	√		
W	1	.01	Toilets	1,2,3	1		
W	1	.02	Urinals	1,2,3	1		

W	1	.03	Lavatory Faucets	2,3	3		
W	1	.04	Kitchen Faucets	1,2	2		
W	1	.05	Showerheads	1,2,3			
W	1	.06	Dishwashers	1,2			
W	2	.01	Condensate Collection	1			
W	2	.02	Greywater System	3			
W	3		Rainwater Harvesting	1,3,5,10			
W	4	.01	Plant/Trees Drought-Tolerant	1,2,3	3		
W	4	.02	Turf/Sod Percentage	1-5			
W	4	.03	No Permanent In-Ground Irrigation	10	10		
W	4	.04	Plant/Trees Compatible with Local Environment	2	2		
W	4	.05	Plant Maintenance Grouping	2	2		
W	4	.06	Mulch (Non-Cypress)	2	2		
W	5	.01	Florida WaterStar or WaterSense	5			
W	5	.02	Florida Friendly Landscape Program	2			
W	6		Irrigated Land Criteria	15			
			Required Category Minimum:	30	26	-4	See Summary

CATEGORY 4: SITE

				Points Available	**Points Targeted**	**Point Differential**	**Comments**
S	PR1		SWPPP & FDEP NOI	0	√		
S	1		FDEP Certified Erosion and Sediment Control	3	3		
S	2	.01	Select Appropriate Site	1	1		
S	2	.02	Urban Growth Boundary	1			
S	2	.03	Permit Ready Site	1			
S	2	.04	Greyfield/Redevelopment of Existing Site	3			
S	2	.05	Brownfield Redevelopment	3			
S	2	.06	Access to Public Transportation	2,3,4			
S	2	.07	Adjacent to Dense Residential Development	1	1		
S	2	.08	Access to Basic Services	1-10	1		
S	3	.01	Wetland Protection and Enhancement	2			
S	3	.02	Minimize Site Disturbance	1			
S	3	.03	Site Open Space	2,4			
S	3	.04	Sidewalks	1	1		
S	3	.05	Connectivity	1	1		
S	4	.01	Minimize Provided Surface Parking	2			

S	4	.02	Under Building Parking	3			
S	4	.03	Shaded, Covered or High Albedo Hardscape	2,3,4			
S	4	.04	Alternative Fuel Vehicles	1,2,3			
S	5		Reduce Heat Islands - Roof	1,2,3,4	1		
S	6		Reduce Heat Islands - Building	1,2,3,4			
S	7	.01	Stormwater Quality Improvement	1,2,3			
S	7	.02	Stormwater Standard	1,2,3			
S	7	.03	Treat Stormwater from Adjacent Sites	1,2,3			
S	7	.04	Littoral Vegetation of Manmade Stormwater	1,2,3			
S	7	.05	Pervious Hardscape	1,2,3			
S	7	.06	Alternative Stormwater Detention	1,2,3			
S	8	.01	Bicycle Storage	1	1		
S	8	.02	Changing Rooms	1			
S	8	.03	Showering Facility	1			
S	9	.01	Dark Sky Requirements	1	1		
S	9	.02	Light Lumens Provide >95 Lumens / Watt	1	1		
S	9	.03	Lights are Solar Powered	1			
S	9	.04	Exterior Lighting on Timers or Daylight Sensors	1	1		
			Required Category Minimum:	10	13	3	

CATEGORY 5: HEALTH

				Points Available	**Points Targeted**	**Point Differential**	**Comments**
H	PR1		Environmental Tobacco Smoke Control	0	√		
H	PR2		Indoor Air Quality Management Plan	0	√		
H	1	.01	Carbon Dioxide	1	1		
H	1	.02	Humidity Monitoring and Control	5	5		
H	1	.03	Building Entrance - Outdoor Pollutants	1	1		
H	1	.04	Building Entrance - Covered Entrance	2	2		
H	1	.05	High Efficiency Air Filtration System	2	2		
H	1	.06	Chemical and Cleaning Product Storage	1	1		
H	1	.07	Radon Mitigation	1	1		
H	1	.08	Pre Occupancy IAQ Testing	1			
H	2	.01	Adhesive and Sealants	1	1		
H	2	.02	Paints and Coatings	1	1		
H	2	.03	Carpet Systems	1			
H	2	.04	Healthy Flooring	1	1		

H	2	.05	Composite Wood and Agrifiber	1			
H	2	.06	Insulation	1	1		
H	2	.07	Green Cleaning	1	1		
H	3	.01	Lighting	1,2,3,4	4		
H	3	.02	Thermal Comfort	1,2,3,4	4		
H	4	.01	Daylighting	1,2,3,4	2		
H	4	.02	Acoustics	4	4		
H	4	.03	Views	1,2,3,4	3		
H	4	.04	Outdoor Space for Employees	1	1		
			Required Category Minimum:	10	36	26	

CATEGORY 6: MATERIALS

				Points Available	Points Targeted	Point Differential	Comments
M	PR1		Storage and Collection of Recyclables	0	√		
M	1	.01	Remodel Existing Building	10			
M	1	.02	Recycled Content	1,2,3,4	1		
M	1	.03	Rapidly Renewable Materials	1,2,3			
M	1	.04	Certified Wood	1,2,3			
M	1	.05	Biobased Materials	1			
M	2	.01	Construction Waste Recycling	2,3,4	2		
M	2	.02	Leased Floor Coverings	1			
M	2	.03	Recyclable Materials	1			
M	2	.04	Demountable/Adaptable Interiors	1			
M	2	.05	Durable Materials, Exterior finish Materials	1			
M	2	.06	Low Maintenance Finishes	1			
M	3	.01	Local Manufacturing	1,2,3,4			
M	3	.02	Local Raw Material Extraction	1,2,3			
M	3	.03	Resource Reuse	1,2			
			Required Category Minimum:	5	3	-2	See Summary

CATEGORY 7: DISASTER MITIGATION

				Points Available	Points Targeted	Point Differential	Comments
DM	1	.01	Impact Glazing	3			

DM	1	.02	Building Integrated Hurricane Shutters	3			
DM	1	.03	Building Hardening	2			
DM	1	.04	Uninterrupted Operations	3			
DM	1	.05	Building is Designated as Hurricane Shelter	5			
DM	2	.01	Termite Prevention	3			
DM	2	.02	Physical Termite Barrier	3			
DM	2	.03	Integrated Pest Management	3	3		
DM	3	.01	Finished Floor Elevation	2	2		
DM	3	.02	Mechanical Equipment Pads	2	2		
DM	3	.03	Coastal Construction Control Line	2			
DM	4		Fire Resistant Exterior Finishes	2			
			Required Category Minimum:	10	7	-3	See Summary

CATEGORY 8: INNOVATION

				Points Available	**Points Targeted**	**Point Differential**	**Comments**
INN	1		Proposed Innovation	1			
INN	2		Proposed Innovation	1			
INN	3		Proposed Innovation	1			
INN	4		Proposed Innovation	1			
INN	5		Proposed Innovation	1			
			Required Category Minimum:	0	0	0	

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SUMMARY

			Minimum Points	Points Targeted	Point Differential	Comments
Category 1		Project Management	0	1	1	
Category 2		Energy	30	35	5	
Category 3		Water	30	26	-4	+4 points to min
Category 4		Site	10	13	3	
Category 5		Health	10	36	26	
Category 6		Materials	5	3	-2	+2 points to min
Category 7		Disaster Mitigation	10	7	-3	+3 points to min
Category 8		Innovation	0	0	0	
Other		Miscellaneous	5			
		REQUIRED MINIMUM	**100**			
		ADJUSTED MINIMUM SUM	**109**	**121**	**12**	**BRONZE**

END OF SECTION 014201

SECTION 014202 FGBC – BASIS OF DESIGN (BOD)

PART 1 - GENERAL

1.1 Section describes design intent for achieving targeted points listed in Section 014201 FGBC – Owner's Project Requirements (OPR).

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 CATEGORY 1: PROJECT MANAGEMENT

A. PR 1: Green Project Meeting

1. A meeting was held on February 3, 2021 with the Owner and project team to discuss green goals for the project.

B. PM 3: Green Education

1. 1 Point
2. Signage to educate building occupants of the sustainable features and benefits to be installed.

3.2 CATEGORY 2: ENERGY

A. PR1: Owner Project Requirements (OPR)

1. Section 014201 FGBC – Owner's Project Requirements (OPR).

B. PR2: Basis of Design (BOD)

1. This section serves as the BOD.

C. PR3: Testing and Balancing of Installed Equipment

1. Testing and balancing to be performed.

D. PR4: Minimum Energy Performance

1. Buildings to meet minimum requirements.
2. Florida Building Code – Energy Efficiency Calculations performed using EnergyGauge Summit Fla/Com – 2017 Software.

E. PR5: CFC Reduction in HVAC Equipment

1. Building HVAC&R systems to be free of CFC's and Halons.

F. E3.01: Commissioning: Fundamental Building Systems

1. 4 points
2. Owner to engage Commissioning Agent (CxA) to provide fundamental commissioning services.

G. E4: Energy Performance Improvement

1. 10 points
2. Building to be 25%-30% more efficient than the current Florida Building Code – Energy Efficiency (Seventh Edition) requirements.

H. E7: Daylight Sensors

1. 2 points
2. 50%-75% of building square footage to be equipped with daylight sensors.

I. E8: Occupancy Sensors

1. 2 points
2. 100% of building square footage to be equipped with occupancy sensors.

J. E9: Interior Lighting

1. 1 point
2. Buildings to be equipped with “all off” system.

K. E10: Lighting Power Density

1. 3 points
2. Average lighting power density to be less than 0.6 w/sf.

L. E11: Exterior Lighting Efficiency

1. 3 points
2. Buildings to meet or exceed the efficiency requirements of the 2018 IECC efficiency for exterior lighting.

M. E13: Energy Monitoring Interface

1. 10 points
2. Building user feedback system to be installed in existing Building No. 10 near southwest entrance.

3.3 CATEGORY 3: WATER

A. PR1: Invasive Plants

1. No invasive plants to be used.

B. PR2: Separate Irrigation Zones – Turf & Beds

1. Turf areas will be limited and manually irrigated. Landscape beds to be limited and manually irrigated.

C. PR3: Rain Shut off Device

1. Rain shut off device to be installed for any new automatic irrigation systems.

D. PR4: Drought Tolerant Landscape

1. 25% or more drought tolerant landscape to be used.

E. W1.01: Toilets

1. 1 point
2. Dual flush toilet with one flush option to be less than 1.6 gpf and one to be less than 1.1 gpf.

F. W1.02: Urinals

1. 1 point
2. Urinal flow rate to be less than or equal to 0.5 gpf.

G. W1.03: Lavatory Faucets

1. 3 points
2. Faucet flow rate to be less than or equal to 0.5 gpm.

H. W1.04: Kitchen Faucets

1. 2 points
2. Faucet flow rate to be less than or equal to 2.0 gpm.

I. W4.01: Plant/Trees Drought-Tolerant

1. 3 points
2. 100% of plants and trees to be drought-tolerant.

J. W4.03: No Permanent In-ground Irrigation

1. 10 points
2. No permanent in-ground irrigation system will be installed.

K. W4.04: Plant/Trees Compatible with Local Environment

1. 2 points
2. Less than 40% of turf and sod will be drought-tolerant.

L. W4.05: Plant Maintenance Grouping

1. 2 points
2. Plants with similar maintenance to be grouped together.

M. W4.06: Mulch (Non-Cypress)

1. 2 points
2. Non-cypress mulch to be applied 3-4 inches deep around plants evenly.

3.4 CATEGORY 4: SITE

A. PR1: SWPPP & FDEP NOI

1. A copy of the SWPPP & FDEP National Pollutant Discharge Elimination System (NPDES) Notice of Intent (NOI) will be onsite for contractor implementations.

B. S1: FDEP Certified Erosion and Sediment Control

1. 3 points
2. FDEP certified erosion and sediment control professional to be employed by Contractor.

C. S2.01: Select Appropriate Site

1. 1 point
2. Selected site is on previously developed land.

D. S2.07: Adjacent to Dense Residential Development

1. 1 point
2. Site is within one mile of a residential development having a density of more than 10 units per acre.

E. S2.08: Access to Basic Services

1. 1 point
2. Site is within one-half mile (measured as a crow flies) of and has safe and walkable access to three of the listed basic services.

F. S3.04: Sidewalks

1. 1 point
2. Sidewalks to be provided for marked paths.

G. S3.05: Connectivity

1. 1 point
2. Connections to adjacent sites to be provided using sidewalks, bike paths, and trails.

H. S5: Reduce Heat Islands – Roof

1. 1 point
2. 20%-40% of roof to be designed to reduce heat island effect.

I. S8.01: Bicycle Storage

1. 1 point
2. Bicycle parking at rate of 2 bicycles per 5,000 sf of space will be provided either via surplus parking in existing bicycle racks or via new racks provided by Owner.

J. S9.01: Dark Sky Requirements

1. 1 point
2. Exterior light fixtures will be designed and located so no light or brightness from those fixtures cross the property boundary.

K. S9.02: Light Lumens Provide > 95 Lumens / Watt.

1. 1 point
2. Installed lighting shall be LED and will provide the minimum stated efficiency.

L. S9.04: Exterior Lighting or Timers or Daylight Sensors

1. 1 point
2. A minimum of 50% of exterior lighting to be controlled by timers or daylight sensors.

3.5 CATEGORY 5: HEALTH

A. PR1: Environmental Tobacco Smoke Control

1. “No Tobacco Use” signs to be installed at all main entrances.

B. PR2: Indoor Air Quality Management Plan

1. Indoor air quality to be protected during construction.

C. H1.01: Carbon Dioxide

1. 1 point
2. Carbon dioxide to be monitored.

D. H1.02: Humidity Monitoring and Control

1. 5 points
2. Humidity to be monitored.

E. H1.03: Building Entrance – Outdoor Pollutants

1. 1 point
2. Owner to provide and maintain non-fixed walk off mats at building entrances.

F. H1.04: Building Entrance – Covered Entrance

1. 2 points
2. Entrances to be covered by more than 50 sf of roof. Covered path leading to parking to be provided.

G. H1.05: High Efficiency Air Filtration System

1. 2 points
2. Ventilation system to use MERV 13 air filters.

H. H1.06: Chemical and Cleaning Product Storage

1. 1 point
2. Chemicals and cleaning products to be stored in ventilated rooms.

I. H1.07: Radon Mitigation

1. 1 point
2. Building to be designed to mitigate for radon.

J. H2.01: Adhesive and Sealants

1. 1 point
2. All adhesive and sealants to be low VOC.

K. H2.02: Paints and Coatings

1. 1 point
2. Interior paints and coating to adhere to low VOC requirements.

L. H2.04: Healthy Flooring

1. 1 point
2. At least 80% of installed flooring to be classified as hard or resilient and comply with GreenGuard requirements.

M. H2.06: Insulation

1. 1 point
2. Insulation to be free of formaldehyde.

N. H2.07: Green Cleaning

1. 1 point
2. Owner to maintain property using only non-toxic cleaning supplies. A list of approved supplies to be posted in custodial rooms.

O. H3.01: Lighting

1. 4 points
2. At least 90% of full time (i.e. staff) occupants to be able to control individual lighting.

P. H3.02: Thermal Comfort

1. 4 points
2. At least 90% of full time occupants (i.e. staff) to be able to control individual temperature.

Q. H4.01: Daylighting

1. 2 points
2. 50%-75% of occupied spaces to achieve 2% Daylight Factor.

R. H4.02: Acoustics

1. 4 points
2. Exterior walls, roof, interior walls, and fenestration to comply with minimum STC ratings.

S. H4.03: Views

1. 3 points
2. 50%-75% of full time occupants to have line of sight to exterior.

T. H4.04: Outdoor Space for Employees

1. 1 point
2. Covered outdoor area for employees for meetings and/or breaks to be provided.

3.6 CATEGORY 6: MATERIALS

A. PR1: Storage and Collection of Recyclables

1. An accessible location for the storage and separation of recyclable materials to be provided.

B. M1.02: Recycled Content:

1. 1 point
2. Incorporate (based on cost) 5% up to 9.99% materials with recycled content. Main materials targeted are concrete and steel.

C. M2.01: Construction Waste Recycling

1. 2 points
2. 50%-75% of waste to be diverted.

3.7 CATEGORY 7: DISASTER MITIGATION

A. DM2.03: Integrated Pest Management

1. 3 points
2. Pest control professional to develop an Integrated Pest Management Plan.

B. DM3.01: Finished Floor Elevation

1. 2 points
2. FFE to be at or above 1’ above the 100 year flood plain.

C. DM3.02: Mechanical Equipment Pads

1. 2 points
2. All mechanical equipment pads to be at or above one foot (1’) above the 100 year flood plain.

3.8 CATEGORY 8: INNOVATION

A. None

END OF SECTION 014202

SECTION 014219 - REFERENCE STANDARDS AND DEFINITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

A. General: Basic contract definitions are included in the Conditions of the Contract.

B. "Reviewed": The term "reviewed," when used in conjunction with the Architect's/Engineer's action on the Contractor's submittals, applications, and requests, is limited to the Architect's/Engineer's duties and responsibilities as stated in the Conditions of the Contract.

C. "Contractor": The term "contractor," "Contractor," "construction manager," or " Construction Manager " describes to entity who has a signed agreement with the Owner as the primary entity contracted to perform the Work. The terms are used interchangably within this document.

D. "Directed": Terms such as "directed," "requested," "authorized," "selected," "reviewed," "required," and "permitted" mean directed by the Architect/Engineer, requested by the Architect/Engineer, and similar phrases.

E. "Furnish": The term "furnish" means to supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

F. "Indicated": The term "indicated" refers to graphic representations, notes, or schedules on the Drawings; or to other paragraphs or schedules in the Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted", "scheduled," and "specified" are used to help the user locate the reference. Location is not limited.

G. "Install": The term "install" describes operations at the Project site including the actual unloading, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. "Installer": An installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, who performs a particular activity including installation, erection, application, or similar operations. Installers are required to be experienced in the operations they are engaged to perform.

I. "Project site" is the space available to the Contractor for performing installation activities, either exclusively or in conjunction with others performing work as part of the Project.

J. "Provide": The term "provide" means to furnish and install, complete and ready for the intended use.

K. "Regulations": The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the industry that control performance of the Work.

1. The term "experienced," when used with the term "installer," means having successfully completed a minimum of 5 previous projects similar in size and scope to this Project; being familiar with the special requirements indicated; and having complied with requirements of authorities having jurisdiction.
2. Trades: Using terms such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.

L. "Testing Agencies": A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.3 WASTE MANAGEMENT DEFINITIONS

A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.

B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.

C. Hazardous: Exhibiting the characteristics of hazardous substances; i.e., ignitability, corrosivity, toxicity or reactivity.

D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitability, corrosivity, toxicity, or reactivity.

E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.

F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

G. Recycle: To remove a waste material from the Project site to another site for remanufacture into a new product for reuse by others.

H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

I. Return: To give back reusable items or unused products to vendors for credit.

J. Reuse: To reuse a construction waste material in some manner on the Project site.

K. Salvage: To remove a waste material from the Project site to another site or for resale or reuse.

L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.

M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.

N. Toxic: Poisonous to humans either immediately or after a long period of exposure.

O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.

P. Volatile Organic Compounds (VOCs): Chemical compounds common in and emitted by many building products over time through outgassing: solvents in paints and other coatings; wood preservatives; strippers and household cleaners; adhesives in particleboard, fiberboard, and some plywoods; and foam insulation. When released, VOCs can contribute to the formation of smog and can cause respiratory tract problems, headaches, eye irritations, nausea, damage to the liver, kidneys, and central nervous system, and possibly cancer.

Q. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

R. Waste Management Plan: A Project-related plan for the collection, transportation, and disposal of the waste generated at the construction site. The purpose of the plan is to ultimately reduce the amount of material being landfilled.

1.4 SPECIFICATION FORMAT AND CONTENT EXPLANATION

A. Specification Format: These Specifications are organized into Divisions and Sections based upon recognized specification systems.

B. Specification Content: These Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.

    a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

1.5 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with the standards in effect as of the date of the Contract Documents, unless otherwise indicated.

C. Conflicting Requirements: Where compliance with 2 or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different but apparently equal to the Architect/Engineer for a decision before proceeding.

1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Refer uncertainties to the Architect/Engineer for a decision before proceeding.

D. Copies of Standards: Each entity engaged in installation on the Project must be familiar with industry standards applicable to its installation activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required installation activity, obtain copies directly from the publication source and make them available on request.

E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where abbreviations and acronyms are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards-generating organization, authorities having jurisdiction, or other entity applicable to the context of the text provision. Refer to Gale Research Inc.'s "Encyclopedia of Associations," which is available in most libraries.

1.6 SUBMITTALS

A. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014219

SECTION 014500 - QUALITY CONTROL AND TESTING LABORATORY SERVICES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Definitions: Quality control services include inspections and tests, and sections related thereto including reports, but do not include contract enforcement activities performed directly by Architect. Quality control services include those inspections and tests and related actions performed by independent agencies and governing actions performed by independent agencies and governing authorities, as well as directly by Contractor.

B. Inspections, tests, and related actions specified in this Section and elsewhere in Contract Documents are not intended to limit contractors' quality control procedures which facilitate compliance with requirements of Contract Documents.

C. Requirements for quality control services by Contractor, as requested or to be requested by Architect, Owner, governing authorities, or other authorized entities are not limited by provisions of this Section.

D. Contractors shall review and become familiar with the requirements of Paragraph 13.4, Tests and Inspections, of the General and Supplementary conditions covering the provisions for testing of the Work.

E. Inspections and testing required by laws, ordinances, rules, regulations, or orders of public authorities and General Conditions.

F. Certification of products and mill test reports: Respective Specification Sections.

G. Test, adjust, and balance of equipment including HVAC equipment.

H. Inspection, sampling, and testing: Soils, asphalt (if any), mortars, grouts and concrete.

1.3 CONTRACTOR RESPONSIBILITIES

A. Except where specifically indicated to be provided by another entity as identified, inspections, tests, and similar quality control services including those specified to be performed by independent agency (not directly by Contractor) are the Contractor's responsibility, and costs thereof are to be included in contract sum.

1. Contractor will engage and pay for the services of an independent agency as approved by the Architect/Engineer to perform inspections and tests through General Contractor.

B. Retest Responsibility: Where results of required inspection, test, or similar service are unsatisfactory (do not indicate compliance of related work with requirements of Contract Documents), retests are responsibility of Contractor; except, first retest is responsible party if retest results are satisfactory. Retesting of work revised or replaced by Contractor is Contractor's responsibility, where required tests were performed on original work.

C. Responsibility for Associated Services: Contractor is required to cooperate with independent agencies performing required inspections, tests, commissioning and similar services. Provide auxiliary services as reasonably requested, including access to work, the taking of samples or assistance with the taking of samples, delivery of samples to test laboratories, and security and protection for samples and test equipment at project site.

D. Coordination: Contractor and each engaged independent agency performing inspections, tests, and similar services for project are required to coordinate and sequence activities so as to accommodate required services with minimum delay of work and without the need for removal/replacement of work to accommodate inspections and tests. Scheduling of times for inspections, tests, taking of samples, and similar activities is Contractor's responsibility.

E. Sampling and testing is required for the following Sections of Work:

1. Section 033000, Cast-In-Place Concrete: Field quality control of concrete.
2. Section 033000, Cast-In-Place Concrete: Tests for concrete materials and mix design tests.
3. Section 042200, Concrete Unit Masonry: Field quality control of mortar.
4. Section 042200, Concrete Unit Masonry: Field quality control of grout.
5. Section 042200, Concrete Unit Masonry: Field quality control of unit masonry and masonry assemblies.
6. Section 051200, Structural Steel Framing: Field quality control for bolted connections and welds.
7. Section 053100, Steel Decking: Field quality control for welds.
8. Additional requirements as may be specified in the Project Manual.

F. Test procedures to be used shall be submitted for approval of the Architect where other than those specified are recommended by the testing agency.

G. Cooperate with laboratory personnel to provide access to Work and to manufacturer's operations.

H. Assist laboratory personnel in obtaining samples at the site.

I. Notify laboratory sufficiently in advance of operations to allow for his assignment of personnel and scheduling of tests.

J. Should the Contractors fail to schedule laboratory services or fail to cancel laboratory services, if the need arises, all additional cost shall be borne by the Contractors.

K. Employ, and pay for, services of a separate, equally qualified independent testing laboratory to perform additional inspections, sampling and testing required when initial tests indicate work does not comply with Contract Documents.

1. Separate laboratory shall be approved by the Owner and the Architect.

1.4 QUALIFICATION OF LABORATORY

A. Shall meet "Recommended Requirements of Independent Laboratory Qualifications," published by American Council of Independent Laboratories. For concrete and steel the laboratory shall comply with the basic requirements of ASTM E 329, "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction."

B. Submit copy of report of inspection of facilities made by Materials Reference Laboratory of National Bureau of Standards during most recent tour of inspection; with memorandum of remedies of deficiencies reported by inspection.

C. Testing equipment shall be calibrated at maximum 12 month intervals by devices of accuracy traceable to either:

1. National Bureau of Standards.
2. Accepted values of natural physical constants.
3. Submit copy of certificate of calibration, made by accredited calibration agency.

D. Submit documentation of specified requirements to Architect.

1.5 SUBMITTALS

A. Where allowed by Authority Having Jurisdiction, Submittals may be in PDF transmitted by email or file transfer protocol (FTP). Should originals be required, submit three (3) copies of test reports directly to the Architect from the approved testing services, with one copy to the Contractor.

1.6 LABORATORY DUTIES, LIMITATIONS OF AUTHORITY

A. Provide qualified personnel promptly on notice.

B. Perform specified inspections, sampling, and testing of materials and methods of construction.

1. Comply with specified standards; ASTM, other recognized authorities and as specified.
2. Ascertain compliance with requirements of Contract Documents.

C. Promptly notify Architect and Contractor of irregularities or deficiencies of Work which are observed during performance of services.

D. Promptly submit reports of inspections and tests in PDF or three (3) originals to the Architect, including the following information, as applicable:

1. Date issued.
2. Project title and number.
3. Testing laboratory name and address.
4. Name and signature of inspector.
5. Date of inspection or sampling.
6. Record of temperature and weather.
7. Date of test.
8. Identification of product and specification.
9. Location in project.
10. Type of inspection or test.
11. Observations regarding compliance with Contract Documents.

E. Laboratory is not authorized to:

12. Release, revoke, alter, or enlarge on requirements of Contract Documents.
13. Approve or accept portion of Work.
14. Perform duties of the Contractor.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 REPAIR AND PROTECTION

A. Upon completion of inspection, testing, sample-taking, and similar services performed on Work, protect work, repair damaged Work and restore substrates and finishes to eliminate deficiencies, including defects in visual qualities of exposed finishes. Except as otherwise indicated, comply with requirements of Section 017329 Cutting and Patching. Protect Work exposed by or for service activities and protect repaired Work. Repair and protection is Contractor's responsibility, regardless or assignment or responsibility for inspection, testing, or similar service. Work disturbed or altered after completion of testing, sample taking and similar service shall be re-inspected or retested by the same testing agency with the cost borne by the Contractor.

END OF SECTION 014500

SECTION 015000 - TEMPORARY FACILITIES

PART 1 - GENERAL

1.1 REFERENCE

A. All applicable requirements of other portions of the Contract Documents apply to the Work of this Section.

1.2 GENERAL

A. Furnish labor, materials, tools, equipment, and services for temporary facilities, including maintenance and their subsequent removal, in accordance with provisions of the contract Documents and as required for the progress and completion of the Project.

B. Pay applicable costs unless specifically stated otherwise.

C. Coordinate temporary facilities work with other trades and the Owner. Rerouting or relocation expenses shall be paid by the responsible Contractor doing the Work if the temporary work has not been coordinated with other trades and the Owner. Routing or relocations of temporary facilities shall also be reviewed by the Architect and Owner before installation.

D. Provide, maintain, and remove supplementary or miscellaneous items, appurtenances, and devices incidental to, or necessary for, a sound, secure, and complete installation.

E. Contractors shall provide and maintain temporary facilities as required for the progress and completion of his contract except as otherwise noted.

F. Repair, as required, work that has been interfered with or damaged as a result of temporary facilities work.

G. The cost for repair of temporary facilities due to abuse or misuse of said facilities by other Contractors will be the financial responsibility of the responsible Contractor that abused or misused that temporary facility.

H. Provide every protection to temporary facilities as required.

I. Contractor requiring one of the temporary services before it can be provided as specified, or whose requirements with respect to a particular service differ from the service specified, shall provide such service as suits his needs at his own expense and in a manner satisfactory to the Architect.

NOTE: Temporary services will not commence until that Contractor responsible for such temporary services starts his field work and places the temporary services into operation.

J. Temporary facilities are to be maintained and kept in good operating condition. Maintenance personnel necessary to perform this Work shall be provided. Maintenance work and repair shall be done in a timely manner causing minimal interference to other trades.

K. Temporary services shall be placed into operations by Contractor in an expedient manner as required by job conditions.

L. Additional costs for providing temporary services beyond the time period provided, shall be at the expense of that contractor requiring that extended service time period.

M. Provide and maintain temporary facilities in compliance with governing rules, regulations, codes, ordinances, and laws of agencies and utility companies having jurisdiction over work involved in project.

N. Each Contractor is responsible for temporary work provided, and shall obtain necessary permits and inspections for such work.

O. Do not interfere with normal use of roads in vicinity of project site except as authorized by Nassau County Traffic Division and all other authorities having jurisdiction.

P. Each Contractor shall provide at his own expense, normal weather protection as required to carry on his work expeditiously during inclement weather and to protect his work and materials form damage by the weather unless stated otherwise herein.

1.3 TEMPORARY FIELD OFFICES OF GENERAL CONTRACTOR

A. The General Contractor shall provide a field office for their staff. Office shall include a conference table with chairs suitable for progress meetings and general use.

B. Contractor's Field Office - Each Contractor

1. As jobsite space allows and as approved by General Contractor, each Subcontractor may provide a secure office of sufficient size and facilities to accommodate his field personnel, storage of field documents, lay-out space for Drawings and a computer for production of record drawings.
2. Costs associated with such field offices are the responsibility of the applicable Contractor.

C. General Contractor shall provide a conditioned space for use by one member of the Owner’s staff. Space shall have 24 hour access and contain office with one desk with chair, and chairs for 2 guest, one 4-drawer file cabinet and other essential basic furniture as required. Office shall have functional plumbing (shared or dedicated restroom), internet access and power. Office may be integrated within Contractor’s Field Office or may be a separate facility in close proximity thereto.

E. Sheds

3. Each Contractor shall provide watertight trailers as required for their work for storage of materials subject to weather damage, vandalism, or theft, including lockable doors and floors above the ground.

1.4 CONSTRUCTION PLANT

A. Each Contractor is to provide all items such as cranes, hoists, and other lifting devices; scaffolding, staging, platforms, runways, and ladders; temporary flooring as required for the proper execution of his Work.

1. Scaffolding and ladders must meet OSHA requirements.
2. No aluminum ladders are permitted.

B. Provide such equipment with proper guys, bracing, guards, railing, and other safety devices as required by governing authority and safety standards.

C. Each Contractor shall provide, maintain and remove suitable means of travel between floor levels of building, including exterior grade levels and to all roof levels for his use until permanent stair systems are installed.

1.5 SIGNS

A. The General Contractor has the option to provide two 4-foot by 8-foot panel signs positioned in a V-configuration to denote their services on the project. Contractor shall submit a Drawing to the Architect for review prior to exercising this option. Contractor shall:

1. Obtain and pay for sign permit, if required by Nassau County.
2. Erect sign prior to or shortly after starting construction work.
3. Allow 2-foot by 8-foot space below signs for Architect to install signs on same supports.
3. Remove signs and properly dress sign area upon completion of construction.

B. No other signs will be permitted.

1.6 TEMPORARY UTILITIES

A. General

1. Codes and Standards

a. Refer to Section 014200 Codes and Standards.

2. Permanently Enclosed and Partially Enclosed:

a. "Permanently Enclosed" shall mean that permanent exterior walls and roofs are in place and weather-tight, windows are in place and glazed, and all entrance enclosures are either permanently in place or are provided with suitable temporary enclosures. The Architect shall determine when the building is permanently enclosed.
b. "Partially Enclosed" shall mean that permanent exterior walls (excluding caulking) and concrete floor(s) or roof is in place; windows are temporarily sealed; and entrances are temporarily sealed off. The Architect shall determine when the building or partial building is partially enclosed.

B. Each Contractor shall provide at his own expense weather protection as required to carry on his work expeditiously during inclement weather and to protect his work and materials from damage by the weather unless stated otherwise herein.

C. Description of Temporary Systems

1. Temporary Electricity - Electrical Contractor

a. Obtaining electrical power, whether portable or line, for the Project is solely the responsibility of the Contractor.
b. The Electrical Contractor is to provide temporary electric service as detailed below. The Electrical Contractor shall comply with NEC and OSHA.
c. Each Contractor and subcontractor shall provide their own grounded, UL listed extension cords and other accessories to point of operation.
d. Contractors and subcontractors who require primary power, secondary power centers, or service connections in excess of the specified minimum shall make arrangements with the Electrical Contractor and pay costs thereof.
e. Refer to additional requirements specified in this Section.

2. Temporary Lighting - Electrical Contractor

a. Safety Lighting: Provide safety lighting in all construction areas and temporary walkways at all times.
b. Lamps shall be covered with safety guard or deeply recessed in reflector. Do not suspend by their electrical cords unless cord and fixture are designed for that purpose.
c. Circuits for power are to be separate from circuits used for lighting.
d. Refer to additional requirements specified in this Section.

3. Temporary Construction Roadway – General Contractor

a. The Contractor may access the site using established public right-of-ways. Once at the site Contractor may have ingress at the existing main parking lot entrance and, if acceptable to Owner, the existing bus entrance. The bus entrance is normally gated except during times of bus arrival and bus departure.
b. Once on the site, Contractor shall provide any temporary drives as required to access construction areas and proposed lay-down / storage areas.

4. Temporary Water - Each Contractor

a. Owner shall furnish water source to General Contractor from existing on-site hose bibs or hydrants.
b. For construction purposes:

1) Each Contractor and subcontractor shall supply adequate water hoses to point of their operations.
2) Provide protection against freezing of the temporary water system.
3) Provide backflow prevention of the temporary water system.
4) The temporary water service shall be removed when directed by the Architect.

c. Maintain adequate volume of water for required purposes.
d. Each Contractor and subcontractor is to provide drinking water and ice for their own forces.

5. Temporary Toilets - General Contractor

a. Provide and maintain temporary toilet facilities, including toilet paper and hand washing facilities for the use of all workers and authorized parties throughout construction period.
b. Provide the following minimum number of approved enclosed combination toilet and urinal units for construction personnel:

1) For less than 20 employees: 1
2) For 20 or more employees: 2 per 40 workers.
3) Provide separate facilities for each gender.

c. Location

1) Within the project site.
2) Secluded from public observation.

d. Moving of portable chemical toilets for installation, cleaning, and removal shall be done during normal working hours.

6. Temporary Fire Protection - Each Contractor

a. Each Contractor shall provide, maintain, and perform protection and prevention of fire or fire hazards during the construction period for the protection of construction materials and personnel in accordance with Owner's Underwriter's recommendation, laws, and regulations. This includes but is not limited to building fire protection system, fire extinguishers, special signs, and removal of combustible materials.

D. Cost of Installation, Operation and Maintenance

1. Designated Contractor to provide and maintain specified temporary utilities until date of Substantial Completion unless otherwise indicated. Pay costs of installation, operation and maintenance of temporary utilities.

a. Temporary Lighting: Electrical Contractor.
b. Temporary Toilets: General Contractor.
c. Temporary Fire Protection: All Contractors.

E. Cost of Utility Consumption

1. The Contractor is ultimately responsible for the cost of all utility consumption for the Project until relieved of that obligation by the Owner. Designated Contractors with sub-responsibility for costs of consumables for temporary utilities are identified below unless otherwise directed by the Contractor.

a. Temporary Electricity - Electrical Energy: By General Contractor
b. Temporary Water – Potable Water / Construction Water: By Owner
c. Temporary Telephone – Data: By Each Contractor

F. Monitor Temporary Utilities

1. Parties designated to provide a temporary utility shall be responsible for damage to his Work or to that of other Contractors caused by a defect in such utility.

a. Enforce compliance with applicable codes and standards.
b. Enforce safe practices.
c. Prevent abuse of services and utilities.
d. Prevent damage to finishes.

2. Do not allow wasteful use of consumables.

G. Use of Permanent Systems for Construction Purposes

1. Obtain prior written authorization for use of systems from Owner and Architect. The Contractor shall not use permanent systems without approval of the Owner. Indicate the following:

a. Conditions and reasons for use.
b. Provisions relating to equipment warranties.

2. Modify and extend system as necessary to meet temporary utility requirements.
3. Upon completion of Work, or when required by the Architect, restore permanent system to specified condition prior to Substantial Completion.

a. Replace burned out or defective lamps (Electrical Contractor).
b. Repair or restore damaged parts or components.

4. Refer to additional requirements specified in this Section.

H. Materials

1. General

a. May be new or used, but must be adequate for purpose intended. Must not create unsafe or unsanitary conditions, nor violate requirements of applicable codes. Comply with applicable Federal and State regulations.
b. Must be removed when Project is completed.

2. Temporary Lighting (Electrical Contractor)

a. Comply with Division 26 and as specified above.
b. Receptacles, fixtures:

1) Standard products, meeting UL requirements.

2) Provide heavy duty guards on fixtures.
3) Provide appropriate types of fixtures and receptacles for environment in which used, in accordance with NNEC, NEMA, and OSHA standards.

c. Refer to additional requirements specified in this Section.

3. Temporary Toilets (by General Contractor)

a. Comply with Division 22.
b. Equipment: Standard products, meeting code requirements. Toilet Facilities: Self ventilated portable chemical toilets.
c. Toilet Tissue: Provide at each toilet, on suitable dispenser, with adequate reserve supply. Monitor daily.

I. Installation

1. General

a. Comply with applicable section of Divisions 22 and 26 and Federal and State regulations.
b. Install work in neat and orderly manner.
c. Make structurally, mechanically, and electrically sound throughout.
d. Maintain to give safe, continuous service, and to provide safe working conditions.
e. Modify and extend systems as work progress requires.

2. Temporary Lighting

a. Control lighting at secondary power centers unless otherwise specified.
b. Install exterior security lighting.

1) Illuminate project site as specified.

c. Refer to additional requirements specified in this Section.

3. Temporary Telephone

a. Each Contractor shall have an operational mobile cellular phone.

4. Temporary Toilets (By General Contractor)

a. Erect securely
b. Service as often as necessary to prevent accumulation of wastes and creation of unsanitary conditions.

1.7 SPECIAL PRECAUTIONS AND REQUIREMENTS

A. Do not block required exits.

B. Conform to all Owner's rules and regulations.

C. Do not interfere with normal use of existing active utility services, except as absolutely necessary to execute required work involving such services, and then only after proper arrangements have been made through the proper authority.

D. Each Contractor is responsible in the performance of his work for protection of existing active utility services.

1. Notification of proposed interruption of service must be made 2 days in advance with the Owner.

1.8 SAFETY AND PROTECTION

A. General

1. Each Contractor must erect and maintain, as required by existing conditions and progress of the Work, every reasonable safeguard for safety and protection, including, but not limited to, posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent utilities.
2. Each Contractor must provide protection at all times against damage with vandalism, theft, weather, and other causes to completed Work, materials, and apparatus.
3. Each Contractor shall take every appropriate precaution to prevent damage to his work and workers of other Contractors. Damage which is caused to another Contractor's Work will be repaired or replaced at the damaging contractor's expense.
4. Site Contractor shall protect existing trees within their canopy, plantings, structures, road, and walks during progress to the Work.
5. Each Contractor shall submit 3 copies of Contractor(s)' safety Program and designate a responsible employee at the site whose duty shall be the prevention of accidents. The person shall be the Contractor's Superintendent unless otherwise designated by the Contractor in writing to the Architect.
6. No Contractor shall load or permit any part of the Work to be loaded so as to endanger its safety.
7. The General Contractor shall have a dedicated and qualified Safety Person for the Project to inspect job for safety hazards of all trades. This person will hold and record safety meetings once a week at the Superintendent Meeting. The Safety Person shall point out immediately to each Contractor each safety hazard he finds. Each Contractor shall correct the safety problem immediately.

    a. If safety problems are not corrected by appropriate trade, then the Safety Person shall take corrective action and charge the appropriate parties.
    b. This Safety Person shall record all accidents for the Project.

8. Each Contractor shall provide safety protection at each area which, because of his operation, creates a safety hazard.
9. Each Contractor that removes existing safety handrail(s) because of his operation shall reinstall or replace immediately upon completion of operation requiring removal. If above operation is not completed on the same day as started, the handrail will be replaced or reinstalled at the end of each workday. The Contractor removing the handrail shall have a

employee remain at this location until the railing is replaced or reinstalled. If the Contractor fails to reinstall handrails, the Architect or General Contractor will direct reinstallation at said Contractor's cost.

10. Each Contractor shall take every appropriate safety precaution to prevent damage to the work or injury to the workers of other Contractors. This includes, but is not limited to, overhead protection.
11. In an emergency affecting the safety of life, the work or adjoining property, the Contractor, without special instruction or authorization from the Architect, or Owner, shall take the action necessary to prevent such threatened injury or loss of life.
12. Each Contractor shall provide at the site first aid supplies for minor injuries. All injuries must be reported immediately to the job office, and the Superintendent of that Contractor shall make a written report thereof. A copy of same shall be sent to the Architect.

B. Water Control

1. Each Contractor shall protect his Work against precipitation.
2. Excavating Contractor shall be responsible for erosion control, dewatering, pumping, and removal of all water until mass excavation has been completed unless otherwise noted.
3. Each Contractor shall take every necessary precaution, including but not limited to cleanup, to prevent floor and roof drains being inoperable. If floor or roof drains are inoperable, the responsible Contractor(s) shall be responsible for the costs of related damages.

C. Safety Devices

1. Each Contractor shall provide fences, barricades, bridges, railings, and guards for protection of construction personnel and the public, and to provide protection of his Work installed.

D. Streets and Sidewalks

1. Each Contractor shall be responsible to keep any public street adjacent to project site reasonably free of mud, debris, and other foreign materials resulting from all project construction and vehicular traffic accessing site to the satisfaction of governing public authorities regulating such conditions.
2. Do not interfere with normal use of streets in vicinity of project site except as indicated or as absolutely necessary to execute required work, and then only after proper arrangements have been made with authorities having jurisdiction including traffic control as applicable.

E. Hazardous Materials

1. When the use or storage of hazardous materials or equipment is necessary for the execution of the Work, the Contractor shall exercise the utmost care and shall carry on such activities under the supervision of properly qualified personnel. Such use and storage shall also be in accordance with governing authority. The use of explosives shall not be permitted.

1.9 TEMPORARY STORAGE

A. Each Contractor shall provide suitable storage facilities for materials delivered to site and protect materials from weather and damage.

1. Temporary storage of materials at site shall not interfere with the Work of other Contractors or the Work and property of the Owner. If necessary or as directed by the Architect, stored materials shall be relocated or removed.
2. Location on site for storage facilities shall be in designated areas as approved by the Architect.

1.10 TEMPORARY ROADS, ACCESS, AND DELIVERY

A. Earthwork/Utility Contractor shall provide and maintain a temporary access on site as necessary for vehicles and equipment of all Contractors requiring access. Remove temporary roads as directed by Architect.

B. Each Contractor shall repair damage to existing pavement or other construction and landscaping when damage results from operations under his Contract.

1.11 OPENINGS FOR ELECTRICAL, MECHANICAL, AND OTHER TRADES

A. Temporary openings not called for on the Drawings, which may be required for the purpose of bringing equipment into the buildings or for placing same, shall be performed as approved by the Architect. The Contractor shall perform the Work of providing and maintaining such openings and of restoring the structure.

B. The Contractor whose equipment or work requires temporary openings are to bear the cost involved in providing such openings and restoring the structure. Ample notice shall be given of size and location of such openings by the Contractor requiring same.

C. Holes provided in general construction work to permit installation of lines for temporary mechanical and electrical services shall be restored by the Contractor doing the affected construction work, after removal of such lines, at no extra cost.

1.12 TEMPORARY FIRST AID FACILITIES

A. Each Contractor and subcontractor shall provide first aid facilities as required by Federal, State, or Local Safety Regulations.

1.13 SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION

A. These Construction Documents and the construction hereby contemplated shall be governed by applicable provisions of Federal, State, and local regulations for construction safety in the State in which the project is located.

1. Each Contractor shall be responsible for the safety and health of persons and property affected by the Contractor's performance of the Work including work performed by his

subcontractors. This requirement shall apply continuously during the entire contact period and shall not be limited to normal working hours.

2. Each Contractor shall designate a qualified safety and health representative to be responsible for the administration of the Contractor's Safety and Health program.

B. Each Contractor shall be responsible for compliance with the above aforesaid safety and health regulations for construction as applicable to the Contractor's Contract and the Contractor's construction means and methods. Each Prime Contractor shall be liable for violations as may be cited or charged against the Contractor by authorities governing the safety and health regulations for construction.

1. The Architect and the Owner shall not be responsible for construction means and methods and shall not be responsible for construction safety. The Contractor shall indemnify and hold harmless the Architect and Owner under the provisions of paragraph 3.18 Indemnification of the General Conditions.
2. Each Contractor shall comply with the General Contractor's Safety Program.

1.14 UTILITY PROTECTION

A. Existing utility lines and structures indicated or known, and utility lines constructed for this Project shall be protected from damage during construction operations.

B. Locate and flag lines and structures before beginning excavation and other construction operations.

C. When utility lines and structures that are to be removed or relocated are encountered within the area of operations, notify the Architect and affected utility in ample time for the necessary measures to be taken to prevent interruption of the services.

D. Damage to existing utility lines or structures not indicated or known shall be reported immediately to the Architect and the affected utility.

1.15 ENVIRONMENTAL PROTECTION

A. In order to prevent and to provide for abatement and control of environmental pollution arising from the construction activities of the Contractor and his subcontractors in the performance of this Contract, each shall comply with applicable federal, state, and local laws, and regulations concerning environmental pollution control and abatement as well as the specific requirements stated elsewhere in the Contract Documents.

B. Items having apparent historical or archaeological interest which are discovered in the course of construction activities shall be carefully preserved. The Contractor shall leave the archaeological find undisturbed and shall immediately report the find to the Architect so that the proper authorities may be notified.

C. No Contractor shall pollute water resources with fuels, oils, bitumens, calcium chloride, acids or harmful materials. It is the responsibility of each Contractor to investigate and comply with applicable federal, state, county, and municipal laws concerning pollution of rivers and streams.

Work under this Contract shall be performed in such a manner that objectionable conditions will not be created in water resources through or adjacent to the project areas.

1. Spillages: Throughout the Project, special measures shall be taken to prevent chemicals, fuels, oils, grease, bituminous materials, waste washings, herbicides and insecticides, and cement from entering water resources.
2. Disposal: If waste material is dumped in unauthorized areas, the Contractor shall remove the material and restore the area to the condition of the adjacent undisturbed area. If necessary, contaminated ground shall be excavated, disposed of as directed by the Architect, and replaced with suitable fill material, compacted and finished with topsoil, at the expense of the Contractor.

1.16 TEMPORARY ELECTRICAL POWER AND LIGHT

A. The General Contractor shall pay for the cost of electrical energy used on this Project.

B. The Electrical Contractor shall make arrangements for and pay for installation of temporary metered service including one time utility company "up/down" charges. Charges for connections to mains, extensions, furnishing of meters or equipment and accessories shall be included in the Electrical Contractor's bid. Regardless of whether the Owner may have to sign with the utility company for these services, the Contractor shall include in his proposal any fees, inspection charges, permit charges, work charges, and other charges and shall be ready to deposit with the utility company said fees when required at time of Owner's signing for utility service.

C. The Electrical Contractor, shall provide, maintain, and connect the temporary electric service for the project office, temporary lighting and power tool usage during the construction and shall include service pole, main disconnect means, wiring, and distribution equipment.

D. Lamps for temporary lighting shall be provided and maintained by the Electrical Contractor at his expense. Every temporary lamp outlet must be properly lamped throughout the construction; dark or burned-out lamps shall be immediately replaced.

E. Wiring of Contractors' offices, trailers, storage facilities, and equipment used during construction, shall be the responsibility of the individual Contractors requiring same.

F. Where a Contractor requires the use of energy at places other than those herein specified or of an amount greater than would be available from the specified temporary service, the Contractor shall make independent arrangements with the Electrical Contractor for the service at his own expense.

G. When permanent facilities are approved by the Architect and Owner as ready for operation, they may be used for temporary light and power. The Electrical Contractor shall arrange with the utility for removal of the temporary metering and shall bear the cost involved in the changeover.

H. Upon approval of use and completion of the changeover to the permanent electrical system, the Electrical Contractor shall remove the temporary electrical service, including power and lighting, distribution and utilization, equipment and wiring.

1.17 TEMPORARY HEATING AND AIR CONDITIONING - PRIOR TO BUILDING ENCLOSURE

A. The building shall not be considered enclosed until the permanent specified building shell is essentially completed with exterior openings, windows, and doors closed by permanent or temporary closures.

B. Each Contractor, until the building is enclosed, shall provide heating and air conditioning for his materials to afford protection of water bearing material against injury by frost or freezing and to permit construction to continue and progress uninterrupted. Each Contractor shall maintain such temporary conditioning until danger of frost, freezing or other damage has passed.

C. Salamanders and electric heaters shall not be permitted; however, portable direct fired heaters fired with LP gas, kerosene, #1, or #2 fuel oil will be allowed. When such heaters are employed, the Contractor shall observe safety precautions necessary; and in no case shall LP gas fired heaters be used in low places of construction, such as pits, tunnels, etc., which can collect heavier than air gas or fumes. Portable heaters must be UL approved.

D. Equipment producing carbon monoxide shall not be used where fumes will contact freshly placed concrete or mortar.

E. Each Contractor shall pay for fuel, maintenance, and related costs for these units until the permanent building is enclosed. Temporary heating equipment shall be subject to the approval of the Architect.

F. Temporary air conditioning or heating is required when ambient temperature is outside those as recommended by manufacturers for products installed. Building air conditioning and heat may be used if installed and operable and if specifically approved by the Architect and Owner.

1.18 TEMPORARY HEATING AND AIR CONDITIONING - AFTER BUILDING ENCLOSURE

A. The building shall be considered enclosed when the permanent specified building shell is essentially completed with exterior openings, windows, and doors closed by permanent or temporary closures.

B. Heating and air conditioning required after enclosure of the Project or designated portion thereof shall be performed by the Contractor with approval of the Owner and Architect. Temporary heating or air conditioning of facilities shall have adequate capacity based upon the following:

1. When incorporating special materials into the construction, maintain space temperatures in strict accordance with the manufacturer's instructions.
2. The following temperatures shall be maintained: 50 degrees minimum during working and non-working hours. For a period of 14 days prior to interior finishing (painting, resilient tile, acoustical ceilings, etc.) and until final acceptance or occupancy by the Owner, spaces shall be kept 60 degrees F. minimum.
3. Maintain constantly in heated areas when the space temperature is once raised above 60 degrees F. a minimum space temperature of 60 degrees F. to prevent thermal shock to the structure.

4. Preheat or cool materials in accordance with manufacturer's instructions and accepted trade practice.

C. After the building or designated portion have been enclosed and temporary heat or air conditioning is required as directed by the Architect and/or the General Contractor, the HVAC Contractor shall provide temporary heat or cooling using the following method:

1. Use of the Permanent Heating and Air Conditioning System

a. The permanent heating and air conditioning system may be used for temporary heating and cooling where available and if approved by the Architect. If the permanent system is used, the HVAC Contractor shall have installed in their permanent location such fan systems, heating coils, convectors, etc., as approved by the Architect. Provide necessary insulated piping to the enclosed space when the boiler is remotely located.

b. Temporary filters shall be used in the permanent system. Provide bases, shields, etc., around heating elements where required to prevent too rapid drying of adjacent concrete, masonry, or plaster. Some of the permanent heating system equipment may require relocation by the HVAC Contractor as required during construction to prevent interference with continuing construction, where authorized by the Architect. Equipment so used shall be cleaned and restored to new conditions except for ordinary wear prior to final acceptance, and its use shall in no way negate the Owner's one year warranty specified to commence on the date of Substantial Completion.

c. If the permanent system is not fully operable or does not have sufficient controls to maintain the necessary heat in light of existing conditions, the HVAC Contractor shall furnish, install, and maintain temporary units connected to the permanent system. Each unit shall be installed complete with safety controls, venting, power and fuel connections, room thermostat and necessary ductwork, and piping approved by the Architect. Portions of the temporary heating system shall be removed by the HVAC Contractor after they are no longer necessary. The temporary heating equipment shall be relocated by the HVAC Contractor as required during construction to prevent interference with continuing construction.

d. Warranty on permanent heating equipment and system(s) will not start until Substantial Completion is issued for complete HVAC Base Bid Work.

D. The cost of fuel and energy used for the operation of the temporary heating or air conditioning system after the building is enclosed shall be paid for by the Contractor until Substantial Completion or approval in writing by the Owner.

1.19 VENTILATION - AFTER BUILDING ENCLOSURE

A. Each contractor shall provide and pay for ventilation of the enclosed space as needed for their own workmen in accordance with applicable laws. Contractor shall also provide ventilation of the enclosed space as required to facilitate drying of plaster, poured decks and floors, or other materials requiring ventilation in accordance with manufacturer's directions.

B. If the permanent ventilation system is used, HVAC Contractor shall assume full responsibility for maintenance of the permanent equipment and shall keep the system clean, furnish and change filters as needed, and turn the complete new heating- ventilation system over to the Owner in a clean condition when the project is completed. Permanent equipment shall not be used for temporary ventilation unless maintained and operated as follows:

1. Return air ducts shall not be used.
2. Supply air to reach unit shall be filtered.
3. Filters shall be constantly checked and changed when necessary.
4. Operation of permanent equipment for ventilation shall not negate the Owner's one year warranty specified to commence on the date of Substantial Completion.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 015000

SECTION 016000 - PRODUCTS, MATERIALS, AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The Work of this Section shall be included as a part of the Contract Documents of each Contractor on this Project.

1.2 SUMMARY

A. It is the intent of the Specifications and Drawings to accomplish a complete and first-grade installation in which there shall be installed new materials and products of the latest and best design and manufacture. Workmanship shall be thoroughly first-class and complete, executed by competent and experienced workers.

B. Equipment, specialties, and similar items shall be checked for compliance and fully approved prior to installation. Contractors are cautioned that work or equipment installed without approval is subject to condemnation, removal, and subsequent replacement with an approved item without extra compensation.

1.3 DEFINITIONS

A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structures," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well recognized meanings in the construction industry.

1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

    a. "Named Products" are items identified by manufacturer's product name, including make or model designation indicated in the manufacturer’s published product literature that is current as of the date of the Contract Documents.
    b. "Foreign Products", as distinguished from "domestic products," are items substantially manufactured (50 percent or more of value) outside of the United States and its possessions; or produced or supplied by entities substantially owned (more than 50 percent) by persons who are not citizens or nor living within the United States and its possessions.

2. "Materials" are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

PART 2 - PRODUCTS

2.1 PRODUCT STANDARD AND QUALITY - SUBSTITUTIONS

A. The Contract is based on the materials, equipment, and methods described in the Contract Documents.

1. All product manufacturers for panel walls, exterior doors, roofing products, skylights, windows, shutters, structural components and products comprising a building's envelope introduced as a result of new technology, whether or not listed or specified, shall comply with Rule 61G-20 Florida Building Commission of the Florida Administrative Code and shall comply with the Florida Building Code – Seventh Edition.
2. If certain manufacturers listed are not approved, the product manufacturer shall be responsible to obtain approvals in accordance with Rule 61G-20 of the Florida Administrative Code prior to submitting product data or shop drawings for this project. Otherwise, the manufacturer will not be acceptable for use on this project.

B. Where, in the Drawings and Specifications certain products, manufacturer's trade names, or catalog numbers are given, it is done for the expressed purpose of establishing a basis of design, quality, durability, and efficiency of design in harmony with the work outlined and is not intended for the purpose of limiting competition.

C. The Architect will consider proposals for substitutions of materials, equipment, and methods only when such proposals are accompanied by full and complete technical data and all other information required by the Architect to evaluate the proposed substitution.

D. Do not substitute materials, equipment, or methods unless such substitution has been specifically approved for this Work by the Architect.

E. "Or equal":

1. Where the phrase "or equal" or "or equal as approved by the Architect" occurs in the Contract Documents, do not assume that material, equipment, or methods will be approved as equal by the Architect unless the item has been specifically approved for this Work by the Architect. The Architect's decision shall be final.

F. Availability of Specified Items:

1. Verify prior to bidding that specified items will be available in time for installation during orderly and timely progress of the Work.
2. In the event specified item or items will not be so available, so notify the Architect prior to receipt of bids.
3. Costs of delays because of non-availability of specified items, when such delays could have been avoided by the Contractor, will be back-charged as necessary and shall not be borne by the Owner.

G. Where the questions of appearance, artistic effect, or harmony of design are concerned, the Architect reserves the right to refuse approval of substituted products proposed to be substituted for that specified, if in his opinion the item to be substituted is not harmonious to the finished effect and appearance desired as portrayed in the Drawings and Specifications. The Architect's said refusal to approve, established by this paragraph, is final and not subject to arbitration.

H. Products of other manufacturers will be considered for acceptance provided they equal or exceed the material requirements and functional qualities of the specified product. Requests for Architect's approval and complete technical data for evaluation must be received at least 10 days prior to bid due date. Additional approved manufacturers will be issued by Addendum.

2.2 MANUFACTURER'S DIRECTIONS

A. Manufactured products shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the manufacturer' printed directions, unless herein specified to the contrary. Where manufacturer's printed directions are available and where reference is made to manufacturer's directions in the Specification, the Contractor shall submit one PDF or two original copies of such directions to the Architect prior to the beginning of Work covered thereby.

B. Where specific installation instructions are not part of these Specifications and Drawings, equipment shall be installed in strict accordance with instructions from the respective manufacturers. Where installation instructions included in these Specifications or Drawings are at a variance with instructions furnished by the equipment manufacturer, the Contractor shall make written request for clarification from the Architect.

C. In accepting or assenting to the use of apparatus or material, or make, or arrangement thereof, the Architect in no way waives the requirements of these specifications or the warranty embodied therein.

2.3 WARRANTIES

A. Specific warranties or bonds called for in the Contract Documents, in addition to that falling under the general warranty as set forth in General Conditions, shall be furnished in accordance with the requirements of the Specifications.

B. Each Contractor shall and does hereby agree to warrant for a period of one year, or for longer periods where so provided in the Specifications as evidenced by the date of Substantial Completion issued by the Architect, products installed under the Contract to be of good quality in every respect and to remain so for periods described herein.

C. Should defects develop in the aforesaid Work within the specified periods due to faults in products or their workmanship, the Contractor hereby agrees to make repairs and do necessary Work to correct defective Work to the Architect's satisfaction in accordance with the Supplementary Conditions. Such repairs and corrective Work, including costs of making good other Work damaged by or otherwise affected by making repairs or corrective Work, shall be done without cost to the Owner and at the entire cost and expense of the Contractor within 14 days after written notice to the Contractor by the Owner.

D. Nothing herein intends or implies that the warranty shall apply to Work which has been abused or neglected or improperly maintained by the Owner or his successor in interest.

E. Where service on products is required under this Article, it shall be promptly provided when notified by the Owner and no additional charge shall be made, unless it can be established that the defect or malfunctioning was caused by abuse or accidental damage not to be expected under conditions of ordinary wear and tear.

F. In the event movement in the adjoining structure or components causes malfunctioning, the Contractor responsible for the original installation of the adjoining structure or components shall provide such repair, replacement, or correction necessary to provide for proper functioning to bring the equipment back into the same operating condition as approved at the completion of the building.

G. The manufacturer and supplier expressly warrants that each item of equipment furnished by him and installed in this Project is suitable for the application shown and specified in the Contract documents and includes features, accessories, and performing characteristics listed in the manufacturer's catalog in force on the date bids are requested for the Work. This warranty is intended as an assurance by the manufacturer that his equipment is not being misapplied and is fit and sufficient for the service intended. This warranty is in addition to and not in limitation of other warranties or remedies required by law or by the Contract Documents. It shall be the responsibility of the Contractor of the particular equipment to obtain this warranty in writing.

H. In case the Contractor fails to do Work so ordered, the Owner may have work done and charge the cost thereof against monies retained as provided for in the Agreement and, if said retained monies is available, the Contractor and his Sureties shall agree to pay to the Owner the cost of such Work.

2.4 MATERIAL DELIVERY AND RESPONSIBILITIES

A. Each Contractor shall be responsible for materials he orders for delivery to the jobsite. Responsibility includes, but is not limited to, receiving, unloading, storing, protecting, and setting in place; ready for final connections. Each Contractor will coordinate jobsite storage with the General Contractor.

1. The Owner shall not be responsible for deliveries related to the Contractor’s construction or operation. Owner cannot sign delivery forms for the Contractor.

B. Contractors shall insure that products are delivered to the Project in accordance with the Construction Schedule of the Project. In determining date of delivery, sufficient time shall be allowed for shop drawings and sample approvals, including the possibility of having to resubmit improperly prepared submittals or products other than those specified and the necessary fabrication or procurement time along with the delivery method and distance involved.

2.5 PROTECTION

A. Each Contractor shall protect building elements and products when subject to damage. Should workmen or other persons employed or commissioned by one Contractor be responsible for damage, the entire cost of repairing said damage shall be assumed by said individual Contractor. Should damage be done by a person or persons not employed or commissioned by a Contractor, the respective Contractors shall make repairs and charge the cost to the guilty person or persons. The affected Contractors shall be responsible for collecting such charges. If the person or persons responsible for damage cannot be discovered, full and satisfactory repairs shall be made by the respective Contractor, and the cost of Work shall be prorated against each Contractor.

B. The respective Contractors shall protect their products prior to installation and final acceptance. Storage shall be dry, clean, and safe. Materials or equipment damaged, deteriorated, rusted or defaced due to improper storage, shall be repaired, refinished, or replaced, as required by the Architect. Products lost through theft or mishandling shall be replaced by the Contractor without cost to the Owner.

2.6 ACCEPTANCE OF EQUIPMENT OR SYSTEMS

A. The Owner will not accept the start of the warranty period on systems or equipment until Substantial Completion is issued to the respective Contractor(s) for Owner's occupancy of the building, in part or whole. Each Contractor shall make such provisions as required to extend the manufacturer's warranty from time of initial operation of systems or equipment until Substantial Completion is given in writing.

END OF SECTION 016000

SECTION 016010 - PRODUCT SUBSTITUTIONS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements for handling requests for substitutions made after award of the Contract.

1.2 DEFINITIONS

A. Definitions used in this Article are not intended to change or modify the meaning of other terms used in the Contract Documents.

B. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by the Contractor after award of the Contract are considered requests for "substitutions." The following are not considered substitutions:

1. Revisions to Contract Documents requested by the Owner or Architect.
2. Specified options of products and construction methods included in Contract Documents.
3. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.3 SUBMITTALS

A. Substitution Request Submittal: Request for product substitution shall be submitted to the Architect no later than ten (10) days prior to bid due date or as noted in Notice to Bidders. Requests received after this time may not be considered.

1. Substitutions after the bid date may be accepted and will be reviewed on a case-by-case basis.

B. Contractor's Substitution Request Form: Submit substitution requests to the Architect (through General Contractor) on the "Contractor Substitution Request Form" attached at the end of this Section.

C. Substitutions shall include product data, samples and shop drawings as required to evaluate the proposed product. Submittals shall also include specified product (some additional engineering may be required with specific materials) with a line-by-line comparison of the products.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Conditions: The Contractor's substitution request will be received and considered by the Owner when one or more of the following conditions are satisfied, as determined by the Owner; otherwise requests will be returned without action except to record noncompliance with these requirements.

1. Extensive revisions to Contract Documents are not required.
2. Proposed changes are in keeping with the general intent of Contract Documents.
3. The request is timely, fully documented and properly submitted.
4. The request is directly related to an "or equal" clause or similar language in the Contract Documents.
5. The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
6. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
7. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner or separate Contractors, and similar considerations.
8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.
9. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.
10. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provide the required warranty.

C. The Contractor's submittal and the Architect's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

PART 3 - EXECUTION (NOT USED)

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CONTRACTOR'S SUBSTITUTION REQUEST FORM

PROJECT: DATE:

SPECIFICATION SECTION: ITEM(S):

SPECIFIED MANUFACTURER:

SPECIFIED MODEL NO:

PROPOSED MANUFACTURER:

PROPOSED MODEL NO:

REASON/S FOR

REQUEST FOR

SUBSTITUTION

Attach complete technical data, including laboratory tests, if applicable, in duplicate.

A. Will approval affect dimensions shown on Drawings in any way? No Yes
Explain (Attach drawings if necessary):

B. Will the Contractor pay for any changes to the building design, including engineering and detailing costs caused by the approval? No Yes
Explain:

C. Will approval affect the work of other trades? No Yes
Explain:

D. Manufacturer's guarantees of the proposed and specified items are: Same Different
Explain:

E. Does the proposed item meet all applicable Codes, Ordinances and regulations for this specific application? No Yes
Explain:

F. Has proposed item been used locally in similar applications? No Yes
Explain:

G. If approved, will the Owner receive a credit for the proposed alternate material? No Yes
Explain:

H. Does the proposed alternate material meet the same applicable standards (ASTM, ANSI, UL, F.S.) as the specified item? No Yes
Explain:

It is the Contractor's responsibility to provide all information necessary to determine the proposed alternate material is equal or better than the specified item. This includes any test reports, product data, manufacturer's specifications, color samples, product samples or the like as may be required for an evaluation.

The Architect and Owner will not be required to prove any product is not equal or suitable to the Project.

SUBMITTED BY:

Firm:

Address:

Signature: Date:

FOR ARCHITECT'S USE:

Not Acceptable

No Exceptions Taken

By: Date:

END OF SECTION 016010

SECTION 017000 - PROJECT CLOSEOUT

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

B. The Work of this Section shall be included as a part of the Contract Documents to the Contractors on this Project.

1.2 SUMMARY

A. Closeout is hereby defined to include general requirements near the end of Contract Time in preparation for final acceptance, final payment, normal termination of contract, occupancy by Owner, and similar actions evidencing completion of the work. Specific requirements for individual parts of the Work are specified in Sections of Divisions 2 through 49. Time of closeout is directly associated to Date of Substantial Completion.

1.3 PREREQUISITES TO SUBSTANTIAL COMPLETION

A. Prior to requesting Architect review for Certificate of Substantial Completion, (for either entire Work or portions thereof), complete the following and list known exceptions in request.

1. Advise Owner of pending insurance changeover requirements.
2. Submit specific warranties, workmanship/maintenance bonds, maintenance agreements, agreements, final certifications, and other required closeout documents.
3. Obtain and submit release enabling Owner's full and unrestricted use of the Work and access to services and utilities, including occupancy permits, operating certificates, and other similar required releases.
4. Deliver tools, spare parts, extra stocks of materials, and similar physical items as specified to the Owner. Obtain receipts for deliveries.
5. Make final changeover of locks and transmit keys to Owner and advise Owner's personnel of changeover in security provisions.
6. Complete start-up testing of systems and instruction of Owner's operating/maintenance personnel. Discontinue and remove from project site temporary facilities and service, construction tools and facilities, mock-ups, and other construction elements.
7. Complete final cleaning requirements per Section 017413, Construction Cleaning.

1.4 PREREQUISITES TO FINAL PAYMENTS

A. Prior to requesting Architect’s final review for certification of final payment, complete the following:

1. Refer to the Supplementary Conditions.
2. Submit final payment request with required close-out attachments.

3. Submit copy of Architect's final punch list of itemized Work to be completed or corrected, stating that each and every item has been completed or otherwise resolved for acceptance.
4. Submit record drawings, maintenance manuals, and similar final record information as specified.
5. Submit certification of code compliance.
6. Submit certification stating that no materials containing asbestos were incorporated into the Work.
7. Plumbing Contractor shall submit certification stating that no flux or solder used for drinking water piping containing more than 0.2 percent lead, and that no pipe or fittings used for drinking water piping contained no more than 0.8 percent lead.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 PUNCH LIST

A. Prior to the Architect's preparation of a Project Punch List, each Contractor shall prepare his own punch list and submit to the Architect and General Contractor for use by the Architect to facilitate completion of the Work.

B. The Contractor's inspection shall be as thorough as possible, in accordance with his aspiration to provide first-class workmanship and maintain good reputation and shall include Work under his Contract including that of his subcontractors.

C. The Architect shall observe the Work, providing that the Work on the Contractor's punch list has been completed and prepare the Project Punch List for use by Contractors and their subcontractors to expedite proper completion of the Work.

D. The Architect will only perform two (2) punch list reviews. The Architect will do the first review prior to issuing the Substantial Completion certificate and will do a second review within 30 days of the first review to verify that the contractor has completed the outstanding items on the first punch list. Additional reviews above and beyond as specified herein are at additional cost to the Contractor and the cost of such additional reviews will be deducted from the Contract by Change Order and provided as compensation to the Architect.

3.2 WARRANTY - CORRECTION OF THE WORK

A. Architect will check if additional Work by the Contractor(s) is needed to make good the warranties. An itemized list will be furnished to the Contractor for corrective or replacement work.

1. At approximately one month prior to the one-year warranty expiration, the Owner, Architect, and a representative of the Contractor shall visit the site and prepare the warranty punch-list.

B. This Work shall be completed immediately by the Contractor(s) after receiving notification.

3.3 PROJECT RECORD DRAWINGS

A. Each Contractor shall keep current during the progress of the Work, and submit updated Project Record Drawings at the completion of the project. Drawings shall incorporate changes made in the Work of the respective trades during the construction period. Such changes shall be indicated at the time they occur for accuracy.

B. Maintain at the job site one copy of Drawings, Project Manual, Addenda, approved shop drawings, change orders, field orders, other Contract modifications, and other approved documents submitted by the Contractor(s), in compliance with various Sections of the Project Manual.

C. Each of these Project Record Documents shall be clearly marked "Project Record Copy"; maintained in good condition; available for observation by the Architect; and shall not be used for construction purposes. Mark up the documents to indicate the following:

1. Significant changes and selections made during the construction process;
2. Significant detail not shown in the original Contract Documents including change orders;
3. The location of underground utilities and appurtenances dimensionally referenced to permanent surface improvements;
4. The location of internal utilities and appurtenances concealed in building structures, referenced to visible and accessible features of the structure;
5. When elements are placed exactly as shown on the Drawings, so indicate; otherwise, indicate changed location.

D. Keep Project Record Documents current. Do not permanently conceal Work until the required information has been recorded.

E. Prior to final payment on the Project, submit to the Architect the Project Record Drawings for changes recorded for the Work of the Project. Submit 2 complete sets of full-size prints and 2 sets of electronic documents in PDF format of these changed working drawings to the Architect for review and transmittal to the Owner.

1. Each drawing shall be labeled "Project Record Drawing", dated and signed by the Contractor.

2. The Contractors for Site Work, Divisions 31, 32 and 33, at a minimum, shall include:

a. Water Mains: Record drawings shall show the following field information:

1) Show material used to construct mains.
2) Show location of tees, crosses, bends, terminal ends, valves, fire hydrants, air release valves, and sampling points, etc.
3) Show location of all sleeves and casing pipes.
4) Elevation and horizontal control of all storm sewers, gravity sewers, including laterals, force mains, etc. which are crossed.
5) Location of all services.

b. Gravity Sewer: Record drawings shall show the following surveyed information:

1) Manholes: Elevation of top rim and invert of each influent and effluent line.
2) Show distance between manholes center-to-center.
3) Show material used to construct sewer mains.
4) Show invert of sanitary service at Building Service.

c. Storm Sewer and Paving: Record drawings shall show the following information:

1) Inlets: Elevation of top of grate and invert(s) of all new or modified structures.
2) Manholes: Elevation of top rim and invert(s).
3) Stub-outs: Length installed.
4) Pipe: Length installed.
5) Paving: As constructed elevations corresponding to plan elevations.
6) Ponds: Top of bank and toe of slope or normal water line elevations at 50' o.c.; inverts and elevations of pond control structure, grate, weir, bleed-down orifices and outfall piping.

d. Electric: Record Drawings shall describe the following information:

1) Transformers: Pad dimensions & location.
2) Underground Electric: Conduit size, quantity and location.
3) Overhead Electrical: Pole location, service wire direction, pole mount transformer location, guys & stays.
4) Handholes: Size & location.

e. Other Utilities and Service Piping:

1) Gas: Locate & describe service line, meters, valving and service connection.
2) HVAC: Locate & describe chiller units, condenser units, chilled waterlines, valves and access ports.

f. Building and Site: Record Drawings shall show the following information:

1) Finish out-to-out Building Dimensions.
2) Location of two (2) building corners referenced to an existing property corner.
3) Location and width of all new sidewalks. Centerline elevations at 50' o.c., tie-ins with existing concrete, changes of direction and slope.
4) Building finish floor at all entrances.

F. The General Contractor shall certify that the Project Record Drawings show complete and accurate as-built conditions, including without limitation, sizes, kinds of materials, vital piping and valves, conduit locations, and other similar and required items.

G. Contractor(s) shall include as part of the Project Record Drawings, a complete and current Project Manual; indicating changes made relating to the specifications. All requirements for the Project Record Drawings apply to the Project Record Project Manual.

H. The General Contractor shall maintain all approved Permit Drawings in a manner so as to make them accessible to governmental inspectors and other authorized agencies. All approved Drawings shall be wrapped, marked, and delivered to the Owner within prior to Final Completion and final payment. The record drawings shall be updated by the Contractor to reflect any changes which have occurred after Substantial Completion.

3.4 CERTIFICATION OF CODE COMPLIANCE

A. Prior to final payment, the contractor indicated below shall submit to the Architect (in duplicate), letters of certification of code compliance as follows:

1. The Subcontractor(s) for Division 21, 22, and 23, Fire Protection / Plumbing / Mechanical Work, shall submit a letter certifying that mechanical installations comply with UMC current applicable editions.
2. The Subcontractor(s) for Divisions 26 and 27, Electrical and Communications Work, shall submit letters certifying that electrical wiring complies with NEC current applicable editions.
3. The Subcontractor for Division 28, Electronic Safety and Security Work, shall submit letters certifying that alarm systems and smoke and heat detection systems comply with State of Florida Codes and Regulations, current applicable conditions.

3.5 MAINTENANCE AND OPERATING MANUALS

A. Prior to Date of Substantial Completion, and a requirement prior to receiving final payment, each Contractor shall submit to the Architect one PDF file (for initial review) of a comprehensive Maintenance and Operating Manual presenting complete directions and recommendations for the proper care and maintenance of visible surfaces as well as maintenance and operating instructions for equipment items which he has provided. Operation and Maintenance Manuals shall include the following:

1. Schematic and piping and wiring diagrams.
2. Valve charts and schedules.
3. Lubrication charts and schedules.
4. Guides for troubleshooting.
5. Pertinent diagrams of equipment with main parts identification.
6. Manufacturer's data on all equipment.
7. Operating and maintenance instructions for all equipment.
8. Manufacturer's parts list.
9. Any testing procedures for operating tests.
10. Roof maintenance manual as specified in Section 073113 Asphalt Shingles.

B. Operating instructions shall include necessary printed directions for correct operations, adjustments, servicing, and maintenance of movable parts. Also included shall be suitable parts lists, approved shop drawings, and diagrams showing parts location and assembly.

C. Upon Architect's approval and prior to issuance of final payment(s), each contractor shall submit one PDF file and three (3) corrected and completed original copies of Operating and Maintenance Manuals to the Architect.

D. Finished original manuals shall be loose-leaf type with hardboard covers and titled tabs identifying each particular portion or item of the Work.

E. For each titled item or portion of the Work, the manual must provide the names, addresses, and phone numbers of the following parties:

1. Contractor/installer
2. Manufacturer
3. Nearest dealer/supplier
4. Nearest agency capable of supplying parts and service

F. For each manual label on front cover or spine, indicate the following information:

1. Project name and address
2. Owner's name
3. Name and address of Architect
4. Name and address of all contractors and their contacts
5. Date of submission

G. The Contractor(s) shall instruct the Owner's operating personnel in the proper use, care and emergency repair of all equipment installed before final payment. The contractor(s) shall call particular attention to any safety measures that should be followed. The instruction shall be adequate to train the Owner's operating personnel in the proper use, care, and emergency repair of such equipment.

H. Refer to Section 013300 Submittals for additional requirements.

3.6 CHARTS AND LOCATIONS OF CONCEALED WORK

A. The subcontractor(s) for Plumbing / Mechanical Work (Divisions 22 and 23) shall prepare suitable charts identifying and locating each concealed control or other concealed item requiring repair, adjustment, and maintenance. Charts shall be mounted in suitable frames with glass covers secured to wall where directed.

B. Charts shall list each item, together with its function, item number and location.

C. Locations throughout the building shall be identified on the wall or ceiling by permanent, non-obstructive plates, labels, or other approved means secured in a permanent manner.

D. Chart details, identification methods, locations, and methods of attachment shall be specified or approved by the Architect at the jobsite upon full submission of proposed procedures and proper execution of same.

END OF SECTION 017000

SECTION 017329 - CUTTING AND PATCHING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for cutting and patching.

B. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1. Requirements of this Section apply to plumbing/mechanical and electrical installations. Refer to Divisions 22, 23 and 26 Sections, respectfully, for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

C. Cutting and patching shall be the responsibility of the contractor (trade) requiring the cutting and patching.

1.3 SUBMITTALS

A. Cutting and Patching Proposal: Where approval of procedures for cutting and patching is required before proceeding, submit a proposal to the Architect describing procedures well in advance of the time cutting and patching will be performed and request approval to proceed. Include the following information, as applicable, in the proposal:

2. Describe the extent of cutting and patching required and how it is to be performed; indicate why it cannot be avoided.
3. Describe anticipated results in terms of changes to existing construction; include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
4. List products to be used and firms or entities that will perform Work.
5. Indicate dates when cutting and patching is to be performed.
6. List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
7. Where cutting and patching involves addition of reinforcement to structural elements, submit details and engineering calculations to show how reinforcement is integrated with the original structure.

8. Approval by the Architect to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of a part of the Work found to be unsatisfactory.

1.4 QUALITY ASSURANCE

A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.

1. Obtain approval from the Architect and Engineer of the cutting and patching proposal before cutting and patching the following structural elements:

a. Foundation construction.
b. Bearing and retaining walls.
c. Structural concrete.
d. Structural steel.
e. Lintels.
f. Timber and primary wood framing.
g. Structural decking.
h. Stair systems.
i. Miscellaneous structural metals.
j. Equipment supports.
k. Piping, ductwork, vessels and equipment.

B. Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.

1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:

a. Shoring, bracing, and sheeting.
b. Primary operational systems and equipment.
c. Air or smoke barriers.
d. Water, moisture, or vapor barriers.
e. Membranes and flashings.
f. Fire protection systems.
g. Noise and vibration control elements and systems.
h. Control systems.
i. Communication systems.
j. Electrical wiring systems.

C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities or result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.

1. If possible, retain the original installer or fabricator to cut and patch the following categories of exposed Work, or if it is not possible to engage the original installer or fabricator, engage another recognized experienced and specialized firm:

a. Processed concrete finishes.
b. Stucco and ornamental plaster.
c. Acoustical ceilings.
d. Finished wood flooring.
e. Carpeting.
f. HVAC enclosures, cabinets or covers.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Use materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials whose installed performance will equal or surpass that of existing materials.

B. Plaster: Comply with ASTM C 842.

1. Base Coat: Ready-mixed, sand aggregate gypsum plaster base.
2. Finish Coat: Ready-mixed gypsum finish plaster.

PART 3 – EXECUTION

3.1 INSPECTION

A. Before cutting existing surfaces, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.

1. Before proceeding, meet at the site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Take all precautions necessary to avoid cutting existing pipe, conduit or ductwork serving the building but scheduled to be removed or relocated until provisions have been made to bypass them.

3.3 PERFORMANCE

A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.

B. Cutting: Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible review proposed procedures with the original installer; comply with the original installer's recommendations.

1. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
3. Cut through concrete and masonry using a cutting machine such as a carborundum saw or diamond core drill.
4. Comply with requirements of applicable Sections of Division-31 where cutting and patching requires excavating and backfilling.
5. By-pass utility services such as pipe or conduit, before cutting, where services are shown or required to be removed, relocated or abandoned. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.

C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

3. Where removal of walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary to achieve uniform color and appearance.

    a. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken area containing the patch, after the patched area has received primer and second coat.

4. Patch, repair or rehang existing ceilings as necessary to provide an even plane surface of uniform appearance.

D. Plaster Installation: Comply with manufacturer's instructions and install thickness and coats as indicated.

1. Unless otherwise indicated provide 3-coat Work.
2. Finish gypsum plaster with smooth-troweled finish. Sand lightly to remove trowel marks and arises.
3. Cut, patch, point-up and repair plaster to accommodate other construction and to restore cracks, dents and imperfections.

3.4 CLEANING

A. Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

END OF SECTION 017329

SECTION 017413 - CONSTRUCTION CLEANING

PART 1 – GENERAL

1.1 RELATED WORK

A. The Work of this Section shall be included as a part of the Contract Documents of each Contractor of this Project.

1.2 SUMMARY

A. The Architect reserves the right to act on behalf of the Owner pertaining to the clean-up responsibilities that are a part of each Contractor's Work.

1.3 PURPOSE – DAILY CLEANING

A. Define and emphasize the responsibility of each Contractor to remove their rubbish and debris from the construction site to guard against fire and safety hazards as well as to provide a more efficient construction operation for all Contractors. If this cleaning is not performed to the satisfaction of the Owner and the Architect, it will be performed for the Contractor at their expense.

1.4 PURPOSE – ROUTINE CLEANING

A. Each Friday afternoon, and more often if necessary, each Contractor shall perform an overall cleanup of the entire site, including a broom cleaning of appropriate surfaces. The trades shall remove their rubbish and debris from the building site to the rubbish collection location promptly upon its accumulation and in no event later than the regular Friday general cleanup.

1.5 RUBBISH CONTAINER

A. The General Contractor shall provide dumpster type rubbish container with lid, sized adequate for the Project waste, debris, and rubbish for the life of the Project.

B. Dispose of container contents weekly or at more frequent intervals if required by inadequate container capacity.

1.6 WASTE MANAGEMENT AND CONSTRUCTION WASTE RECYCLING

A. General Contractor shall develop and implement a waste management plan, quantifying material diversion goals. Recycle and / or salvage a minimum of fifty percent (50%) of construction, demolition and land clearing waste. Calculations can be done by weight or volume but must be consistent. Comply with Florida Green Building Coalition Green Commercial Building Standards:

1. Provide reports monthly indicating diverted waste.
2. Calculate the total waste material diversion rate.
3. Educate construction team members and subcontractors regarding waste management.

1.7 SAFETY REQUIREMENTS

A. Hazards Control (By each Contractor):

4. Store volatile wastes in covered metal containers, and remove from the premises daily.
5. Prevent accumulation of wastes, which create hazardous conditions.
6. Provide adequate ventilation during use of volatile or noxious substances.

B. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.

1. Do not burn or bury rubbish and waste materials on project site.
2. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
3. Do not dispose of wastes into streams or waterways.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Use only cleaning materials recommended by manufacturer of surface to be cleaned.

B. Use cleaning materials only on surface recommended by cleaning material manufacturer.

PART 3 – EXECUTION

3.1 DAILY CLEANING

A. Each Contractor shall execute daily cleaning to ensure that building, grounds, and public properties are maintained free from accumulations of waste materials and rubbish.

B. Wet-down dry materials and rubbish to lay dust and prevent blowing dust.

C. Daily, during progress of work, clean site and public properties and dispose of waste materials, debris, and rubbish in dumpster type rubbish container provided under this Section.

D. Handle materials in a controlled manner with as few handlings as possible; do not drop or throw materials from heights.

E. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces.

F. Place no new work on dirty surfaces.

3.2 ROUTINE CLEANING

A. Employ experienced workmen for cleaning.

B. Remove dirt, mud, and other foreign materials from sight exposed interior and exterior surfaces.

C. Each Friday, or at more frequent intervals if work activities justify same, perform the following cleaning. This includes all dirt, dust, and debris not identifiable as part of a Contract. Broom clean floor and paved surfaces; rake clean other surfaces of ground.

D. Maintain adjacent roads free from the accumulation of mud, rocks, rubbish, litter and debris resulting from construction activities.

E. Remove litter, rubbish and debris from chases, whether the chases will be accessible or not.

F Maintain cleaning throughout the life of the Project.

G. Should the Contractor fail in the performance of this Work, the Owner may perform such Work in accordance with Article 3 of the General Conditions.

3.3 FINAL CLEANING (Each Contractor)

A. Each Contractor shall perform his respective final clean-up and shall leave the Work of the complete Project in clean, neat condition. The following are examples, but not by way of limitation, of cleaning levels required.

1. Remove labels which are not required as permanent labels.
2. Clean transparent materials, including mirrors and window/door glass, to a polished condition, removing substances which are noticeable as vision-obscuring materials. Replace broken glass and damaged transparent materials.
3. Clean exposed exterior and interior hard surfaces to a dirt free condition, free of dust, stains, films, and similar noticeable distracting substances. Except as otherwise indicated, avoid disturbance of natural weathering of exterior surfaces. Restore reflective surfaces to original reflective condition.
4. Wipe surfaces of mechanical and electrical equipment clean; remove excess lubrication and other substances.
5. Remove debris and surface dust from limited access spaces including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
6. Clean concrete floors in non-occupied spaces broom clean.
7. Vacuum clean carpeted surfaces and similar soft surfaces.
8. Clean plumbing fixtures to a sanitary condition, free of stains, including those resulting from water exposure.
9. Clean light fixtures and lamps so as to function with full efficiency. Replace all lamps that are burnt out and/or flickering.
10. Clean project site (yard and grounds), including landscape development areas, of litter and foreign substances. Sweep paved areas to a broom clean condition; remove stains, petro-chemical spills, and other foreign deposits. Rake grounds which are neither planted nor paved to a smooth, even textured surface.

END OF SECTION 017413

SECTION 017415 - PEST CONTROL (DURING CONSTRUCTION)

PART 1 – GENERAL

1.1 SUMMARY

A. Provide treatment for pest control, as herein specified.

1. Apply to all interior floor to wall corners and around building perimeter at existing grades.

1.2 SUBMITTALS

A. Product Data: Submit manufacturer's technical data and application instructions in accordance with Division 1 requirements.

B. Submit specific product warranty as specified herein.

1.3 QUALITY ASSURANCE

A. In addition to requirements of these specifications, comply with manufacturer's instructions and recommendations for work, including preparation of substrate application.

B. Engage a professional pest control operator, licensed in accordance with regulations of governing authorities for application of soil treatment solution.

C. Use only chemicals that bear a Federal registration number of the U.S. Environmental Protection Agency.

1.4 SPECIFIC PRODUCT WARRANTY

A. Furnish written warranty, certifying that applied insecticide treatment will prevent infestation of common household insects such as cockroaches, ants, and fleas. If insect activity is discovered during warranty period, Contractor will re-treat.

PART 2 – PRODUCTS

2.1 PEST CONTROL SOLUTION

A. Use an emulsible concentrated insecticide for dilution with water, specially formulated to prevent infestation by insects. Fuel oil will not be permitted as a dilutent. Provide a solution consisting of one of following chemical elements and concentrations:

1. "Demon WP", by Sygenta.
2. “Home Defense Insect Killer for Indoor and Perimeter”, by Ortho.
3. Approved equivalent.

B. Other solutions may be used as recommended by Applicator if also acceptable to Architect and approved for intended application by jurisdictional authorities. Use only insecticide treatment solutions that are not injurious to planting.

PART 3 – EXECUTION

3.1 APPLICATION

A. Surface Preparation: Remove foreign matter that could decrease treatment effectiveness on areas to be treated.

B. Application Rates: Mix chemicals (from sealed containers) with water at the job-site, then apply concentrate solution only at rates described by the manufacturer on the product label and in compliance with State of Florida laws.

C. Post signs in areas of application to warn workers that insecticide treatment has been applied. Remove signs when areas are covered by other construction.

D. Re-apply concentrate solution to areas disturbed by construction activities following application.

E. Applicator shall mix all treatment on-site and mixing shall be witnessed by the Owner's representative.

F. The applicator shall treat all buildings on a frequency of once per month starting when the building is dried-in with windows, doors and roofing in place. The last two treatments shall be applied at substantial completion and at 30 days after substantial completion.

G. Applicator shall treat all interior spaces of buildings including but not limited to each side of bottom of interior walls, interior side of exterior walls, bottom of vinyl bases, perimeter of windows, bottom of exterior side of exterior wall, and any other areas/ openings on exterior side of building.

END OF SECTION 017415

SECTION 019113 – GENERAL COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Commissioning description and responsibilities.

1.2 COMMISSIONING DESCRIPTION

A. Commissioning: Systematic process of ensuring systems perform interactively according to design intent and Owner's operational needs. Commissioning process encompasses and coordinates system documentation, equipment startup, control system calibration, testing and balancing, performance testing and training, and verification of actual performance.

B. Commissioning Intent:

1. Verify equipment and systems are installed according to manufacturer's instructions, industry accepted minimum standards, and Contract Documents.
2. Verify equipment and systems receive adequate operational checkout by Contractor.
3. Verify and document proper performance of equipment and systems.
4. Verify complete operation and maintenance documentation is delivered to Owner.
5. Verify Owner's operating and maintenance personnel are adequately trained.

C. Commissioning to include the following systems installed as part of the Work:

1. HVAC systems and controls.
2. Domestic hot water systems.
3. Lighting control systems.

D. Commissioning does not relieve Contractor of responsibility to provide finished and fully functioning Project.

E. Commissioning Process Overview and General Order of Commissioning Tasks:

1. Conduct initial and progress commissioning meetings throughout construction to plan, scope, coordinate, and schedule future activities and to resolve problems.
2. Equipment documentation is submitted to Commissioning Authority during normal submittals with detailed startup procedures.
3. Commissioning Authority works with Contractor and equipment and system installers to develop startup plans and startup documentation formats, including verification checklists to be completed by installers, during verification check and startup process.
4. Equipment and system installers execute and document verification checklists and perform verification check and startup. Commissioning Authority verifies that checklists and startup were completed according to approved plans.

5. Commissioning Authority develops specific equipment and system functional performance test procedures. Equipment and system installers and Contractor review procedures.
6. Equipment and system installers execute procedures under direction of and documentation by Commissioning Authority.
7. Items of noncompliance in material, installation, or setup are corrected at Contractor's expense, and system is retested.
8. Commissioning Authority reviews operation and maintenance documentation for completeness.
9. Commissioning is completed before Substantial Completion.
10. Commissioning Authority reviews, approves, and coordinates training provided by equipment and system installers and verifies training was completed.
11. Deferred testing is conducted as specified.

1.3 SUBMITTALS

A. Section 013300 - Submittals contains requirements for submittals.

1.4 COMMISSIONING SUBMITTALS

A. Architect shall coordinate transmittal of submittals to Commissioning Authority.

B. Commissioning Authority will review and approve submittals for conformance to Contract Documents as related to commissioning process, for primary purpose of aiding development of functional testing procedures and secondary purpose of verifying compliance with equipment Specifications.

1.5 CLOSEOUT SUBMITTALS

A. Section 017000 – Project Closeout contains requirements for closeout submittals.

B. Operation and Maintenance Data: Submit operation and maintenance manuals as specified in individual equipment and system Specifications.

C. Final Commissioning Report: Commissioning Authority will submit electronic copy of final commissioning report to Owner with copy provided to Architect/Engineer and copy provided to Contractor, for inclusion in operation and maintenance manuals, including, but not limited to, the following:

1. Executive summary with list and roles of participants, brief Project description, overview of commissioning and testing scope, and general description of testing and verification methods.
2. Statement for each piece of commissioned equipment regarding compliance with Contract Documents.
3. Recommendations for improvement to equipment or operations, future actions, and commissioning process changes.
4. List of outstanding deficiencies referenced to specific functional test, inspection, trend log, or other record where deficiency is documented.
5. Brief description of verification method used as well as observations and conclusions from testing for each commissioned piece of equipment and system.

1.6 COMMISSIONING SERVICES

A. Owner will employed and will pay for specified services of the independent firm indicated herein as Commissioning Authority.

B. Commissioning Authority: Firm to be determined.

1.7 COMMISSIONING RESPONSIBILITIES

A. General responsibilities of Architect/Engineer, Commissioning Authority, Owner and Contractor are indicated herein. This division of responsibilities will typically support a commissioning process such as is intended for this project. Additional effort may be required and/or additional responsibilities accrued by any of the parties depending upon the preparations for and/or outcomes of commissioning activities.

B. Architect/Engineer Responsibilities:

1. Perform site observation of installation of each system as Architect/Engineer deems necessary.
2. Furnish design narratives and sequence documentation requested by Commissioning Authority.
3. Coordinate resolution of design issues affecting system performance identified during commissioning.
4. Coordinate resolution of system deficiencies identified during commissioning, according to Contract Documents.
5. Review and approve construction submittals, test, adjust and balance reports and operation and maintenance manuals.

C. Commissioning Authority Responsibilities:

1. Basic Responsibilities:

a. Coordinate, direct, and approve commissioning Work.
b. Develop and coordinate execution of commissioning plan. Revise as necessary.
c. Schedule commissioning Work with Contractor.
d. Plan and conduct commissioning meetings.
e. Request and review commissioning submittals required to perform commissioning tasks.
f. Write and distribute verification tests and checklists.
g. Develop verification check and startup plan in cooperation with Architect/Engineer.
h. Write functional performance test procedures in cooperation with Architect/Engineer.
i. Review test and balance execution plan.
j. Attend selected Project progress and pre-installation meetings. Review meeting minutes. Resolve potential conflicts with commissioning activities.
k. Observe equipment and system installations.
l. Document that equipment and systems are installed and perform according to design intent and Contract Documents.
m. Notify Architect/Engineer and Owner of deficiencies.
n. Oversee and approve content and adequacy of Owner's personnel training.
o. Review and approve operation and maintenance manuals.
p. Compile commissioning record and testing data manual.
q. Provide final commissioning report.

2. Commissioning Authority may not:

    a. Release, revoke, alter, or enlarge on requirements of Contract Documents.
    b. Approve or accept any portion of the Work.
    c. Assume duties of Contractor or Architect/Engineer.
    d. Stop the Work.

D. Owner Responsibilities:

1. Arrange for Owner's personnel to attend commissioning activities and training sessions according to commissioning plan.
2. Approve commissioning Work completion.

E. Contractor Responsibilities:

1. Inform any subcontractors responsible for mechanical, electrical, plumbing, controls and test, adjust and balance of the requirements of this section.
2. Include requirements for commissioning submittal data, operation and maintenance data, commissioning tasks and training in each purchase order and subcontract for equipment and systems indicated to be commissioned.
3. Facilitate coordination of commissioning Work by Commissioning Authority.
4. Attend commissioning meetings.
5. Cooperate with Commissioning Authority, and provide access to the Work.
6. Require equipment and system installers to execute test to review and provide comments on functional test procedures.
7. Require manufacturers to review commissioning test procedures for equipment installed by manufacturer.
8. Furnish proprietary test equipment required by manufacturers to complete equipment and system tests as well as standard test, adjust and balance instruments during commissioning activities.
9. Furnish qualified personnel to assist in completing commissioning.
10. Furnish manufacturer's qualified field representatives to assist in completing commissioning.
11. Ensure equipment and system installers execute commissioning responsibilities according to Contract Documents and Progress Schedule.
12. Coordinate and perform Owner's personnel training.
13. Prepare operation and maintenance manuals. Update original sequences of operation reflecting actual installation.
14. Ensure equipment and system installers correct deficiencies and make necessary adjustments to resolve issues identified during commissioning activities.
15. Provide all personnel access equipment for the execution of functional testing.

1.8 SCHEDULING

A. Schedule Work to allow adequate time for commissioning activities.

B. Identify commissioning milestones, activities, and durations on Progress Schedule.

PART 2 - PRODUCTS

2.1 TEST EQUIPMENT

A. Equipment Furnished by Contractor and Remaining Property of Contractor:

1. Standard testing equipment required to perform verification check and startup and required functional performance testing.
2. Two-way radios for personnel performing commissioning.
3. Portable laptop with fully loaded controls package for execution of functional testing when local workstation with PC interface is not being provided as part of the Work.
4. BAS trend logging equipment and software.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 013000 - Administrative Requirements contains requirements for verification of existing conditions before starting Work.

B. Verify equipment and systems are installed according to individual Specification Sections.

C. Verify utility and power connections are complete and services operational.

3.2 VERIFICATION CHECK AND STARTUP PROCEDURES

A. Notify Commissioning Authority and schedule verification check and startup activities with each party required to complete verification check and startup a minimum of two (2) weeks in advance.

B. Allow Commissioning Authority to witness verification check and startup.

C. Deficiencies and Approvals:

1. Commissioning Authority will review verification check and startup reports and issue deficiency report or approval.
2. Correct deficiencies and resubmit updated verification check and startup report with statement indicating corrections made for Commissioning Authority approval.
3. Repeat process until verification check and startup report are approved.
4. Costs for incomplete verification check and startup items that later cause deficiencies or delays during functional tests will be charged to party responsible for incomplete item.

3.3 DEFICIENCIES AND TEST APPROVALS

A. Deficiencies:

1. Commissioning Authority will record and report deficiencies to Architect/Engineer and Owner.

2. Minor deficiencies may be corrected during tests at Commissioning Authority's discretion. Deficiency and resolution will be documented on procedure form.
3. Failure to attend scheduled verification check, startup, or functional performance test will be considered deficiency.
4. When deficiency is identified, Commissioning Authority will discuss issue with party executing test.

B. Retesting Costs:

1. When verification check and startup or functional performance test deficiency is discovered requiring rescheduling or retesting beyond one (1) additional reschedule or retest of any single item:

    a. Owner will compensate Commissioning Authority and/or Architect/Engineer for attending and directing additional testing.
    b. Owner will deduct additional testing compensation from final payment due to Contractor.

C. Provide written report to Commissioning Authority before each scheduled commissioning meeting concerning status of each deficiency. Include explanations of disagreements with resolution proposals for each discrepancy.

D. Test Approval: Commissioning Authority will document each satisfactorily demonstrated function on functional performance test form.

3.4 DEMONSTRATION

A. Section 017000 - Execution and Closeout Requirements contains requirements for demonstration and training.

B. Demonstrate equipment and systems and train Owner's personnel as specified in individual equipment and system Specifications.

1. Commissioning Authority will interview Owner's personnel to determine special needs and areas where training will be most valuable.
2. Owner and Commissioning Authority will determine type and extent of training for each commissioned piece of equipment and system.
3. Commissioning Authority will communicate training requirements to Contractor for benefit of equipment and system installers and manufacturers with training responsibilities.

C. Commissioning Authority will review the training syllabus and attendance sheet for training sessions provided by the Contractor for completeness.

END OF SECTION 019113

SECTION 020100 – UNDERGROUND FACILITIES

PART 1 – GENERAL

1.1 DESCRIPTION: Work under this Section consists of furnishing all tools, equipment, and labor as described herein.

1.2 SUBMITTALS:

A. Submit sketches of all conflicts and proposed resolution of conflicts.

B. Record Drawings shall depict all Underground Facilities encountered in the work.

PART 2 - PRODUCTS
(Not Applicable)

PART 3 – EXECUTION

3.1 INSTALLATION:

A. Location of Underground Facilities:

1. Underground Facilities are underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any other encasements containing such facilities, including those which convey electricity, gases, compressed air, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

2. Prior to excavation, the Contractor shall conduct an investigation into the location of all Underground Facilities. The objective of this investigation is to determine the locations of Underground Facilities in advance of actual construction in order to resolve ahead of time conflicts with the proposed work. Underground Facilities that are shown or indicated are based on limited information. The locations shown or indicated are only approximate and it is probable that there are Underground Facilities that are not shown or indicated.

3. The Contractor shall, by means of standard geophysical prospecting techniques, designate (to indicate by marking) the presence and approximate depths of Underground Facilities along the routes of proposed construction. All Underground Facilities within five (5) feet of the proposed work shall be designated.

4. The Contractor shall locate Underground Facilities to obtain accurate horizontal and vertical positions and may utilize any methods or procedures he deems appropriate for locating, but not damaging, the Underground Facilities. These methods may include, but not be limited

to, careful hand excavation, pot-holing, and the use of ground penetrating radar (GPR). All Underground Facilities shall be located, both those shown or indicated and those that are not shown or indicated. The Contractor shall have full responsibility for the safety and protection of all Underground Facilities and repairing any damage thereto resulting from the work.

5. If an Underground Facility is uncovered or revealed which constitutes an unforeseen obstruction, the Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any work in connection therewith, give notice to the Engineer. The Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is needed in the Contract to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

END OF SECTION 020100

SECTION 020600 – SOIL BORINGS

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. Soils information contained in the documents referenced below are provided for the Contractor's information. The information provides a general indication of the soils and groundwater at the site at the time(s) and location(s) indicated. Soil and groundwater conditions may vary away from the sampling locations and may have changed over time at the sampling locations.

B. Contractor shall review information and conduct independent investigations as needed to verify subsurface conditions at the areas of Work to his / her satisfaction.

C. Information provided was obtained during an investigation of both Yulee Middle School and Yulee High School. The schools share a contiguous site. Follow-up investigation was performed on the Yulee Middle School site.

D. Owner, Architect and Geotechnical Engineer(s) are not responsible for interpretation or conclusions drawn from information provided under this Section.

E. Geotechnical investigations were performed by: Universal Engineering Sciences (Stephen R. Weaver, PE).

F. Documents included for informational purposes only:

1. Report of a Geotechnical Exploration – Yulee Middle School & Yulee High School, Yulee, Florida, Report No. 1821965 dated December 3, 2020 by Universal Engineering Sciences.
2. Report of a Geotechnical Exploration – Yulee Middle School Retention Pond, Yulee, Florida, Report No. 1850523 dated March 23, 2021 by Universal Engineering Sciences.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 020600

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REPORT OF A GEOTECHNICAL EXPLORATION

Yulee Middle School & High School
Yulee, Florida

December 3, 2020

PROJECT NO. 0930.2000219.0000
REPORT NO. 1821965

Prepared for:

R. DEAN SCOTT, ARCHITECT, INC
126 West Adams Street – Site 602
Jacksonville, Florida 32202

Prepared by:

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- Tifton
- West Palm Beach

December 3, 2020

R. Dean Scott, Architect, Inc.
126 West Adams Street – Suite 602
Jacksonville, Florida 32202

Attention: Mr. Dean Scott

Reference: **REPORT OF A GEOTECHNICAL EXPLORATION**
Yulee Middle School & High School
Yulee, Nassau County, Florida
UES Project No. 0930.2000219.0000 and Report No. 1821965

Dear Mr. Scott:

Universal Engineering Sciences, LLC has completed a subsurface exploration at the site of the proposed project located in Yulee, Florida. These services were provided in general accordance with our Proposal No. 1801047, dated September 8, 2020. This report contains the results of our exploration, an engineering evaluation with respect to the project characteristics described to us, and recommendations for groundwater considerations, foundation design, pavement design, stormwater management considerations, and site preparation. A summary of our findings is as follows:

- The borings generally encountered loose to medium dense fine sand, fine sand with silt, and fine sand with clay (SP, SP-SM, SP-SC) with few very loose zones in the upper 25 feet. Medium dense to dense fine sand and fine sand with clay (SP, SP-SC) with few loose clayey fine sand zones were penetrated to depths of 72 to 73 feet. Hard limestone then extended to the deepest boring termination depths of 75 feet below existing grade.

- The groundwater level was recorded between depths of 1.8 to 8.0 feet below the existing ground surface. The variations in groundwater levels are likely due to topographical differentials and proximity to drainage features. We estimate the seasonal high groundwater level will be approximately 1 to 1.5 feet above the water levels encountered at the time of our exploration.

- Assuming the building and pavement areas will be constructed in accordance with our Site Preparation Recommendations, we have recommended the proposed structures be supported on a conventional, shallow spread foundation system with an allowable soil bearing pressure of 2,500 pounds per square foot.

- A rigid or flexible pavement section could be used on this project. Flexible pavement combines the strength and durability of several layer components to produce an appropriate and cost-effective combination of available construction materials. Concrete pavement has the advantage of the ability to "bridge" over isolated soft areas, and it typically has a longer service life than asphalt pavement. Disadvantages of rigid pavement include an initial higher cost and more difficult patching of distressed areas than occurs with flexible pavement.

- Hydraulic conductivity testing for the relatively undisturbed sample from borings B-12 and B-13 indicated horizontal permeability rates of 2.6 and 3.2 ft/day, respectively. In addition, boring B-13 indicated a vertical permeability rate of 7.7 ft/day. The Shelby tube samples were obtained at a depth of 6 inches horizontally and vertically for each sample. The double ring infiltrometer testing indicated an infiltration rate at boring B-12 of 18.2 ft/day.

- Based on the borings performed in the stormwater management areas (B-12, B-13), the soils described as fine sand, fine sand with silt, and fine sand with clay (SP, SP-SM, SP-SC) as encountered throughout the 20-foot boring termination depths are considered suitable for use as structural fill. It should be understood that soils excavated from below the water table may be excessively wet and may require stockpiling or spreading to dry prior to placement and compaction.

- We recommend only normal, good practice site preparation techniques to prepare the existing subgrade to support the proposed structure addition. These techniques include clearing the construction areas, removing any existing utilities, dewatering if warranted, stripping topsoils and vegetation, compacting the subgrade and placing engineered fill to the desired grades.

We trust this report meets yours needs and addresses the geotechnical issues associated with the proposed construction. We appreciate the opportunity to have worked with you on this project and look forward to a continued association. Please do not hesitate to contact us if you should have any questions, or if we may further assist you as your plans proceed.

Respectfully submitted,

UNIVERSAL ENGINEERING SCIENCES, LLC
Certificate of Authorization No. 549

STEPHEN R. WEAVER LICENSE NO. 37389 STATE OF FLORIDA PROFESSIONAL ENGINEER

Stephen R. Weaver, P.E.
Geotechnical Services Manager
FL P.E. Number 37389
Date: 12/3/20

Payton W. Mann, E.I.
Project Engineer
Date: 12/3/20

TABLE OF CONTENT

1.0 INTRODUCTION

In this report, we present the results of the subsurface exploration of the site for the proposed project located in Yulee, Nassau County, Florida. We have divided this report into the following sections:

- SCOPE OF SERVICES - Defines what we did
- FINDINGS - Describes what we encountered
- RECOMMENDATIONS - Describes what we encourage you to do
- LIMITATIONS - Describes the restrictions inherent in this report
- APPENDICES - Presents support materials referenced in this report

2.0 SCOPE OF SERVICES

2.1 PROJECT DESCRIPTION

Project information was provided to us in recent correspondence with you. We were provided with two RFP's, one from Atlantic Engineering Services and one from Mittauer & Associates, Inc. These RFP's include the requested geotechnical engineering services and a plan showing the existing structures, proposed structures, requested boring locations, and adjacent roadways.

We understand that the proposed construction will consist the addition of two buildings (26,696 and 28,274 square-feet), one pond, new tennis courts, an expanded bus loop and connector drive, expanded parking areas, new roadways, and walkways at Yulee Middle School and Yulee High School in Yulee, Florida. It is understood that retaining walls may be required in the existing main pond. Detailed grading information has not been provided, therefore we assume maximum elevating fill heights will not exceed 2 feet. In addition, structural loading information has not been provided therefore, we assume maximum column and wall loads will not exceed 150 kips and 4klf, respectively.

We note that since the applicability of geotechnical recommendations is very dependent upon project characteristics, most specifically: improvement locations, grade alterations, and actual structural loads applied, UES must review the preliminary and final site and grading plans, and structural design loads to validate all recommendations rendered herein. Without such review our recommendations should not be relied upon for final design or construction of any site improvements.

2.2 PURPOSE

The purposes of this exploration were:

- to explore the general subsurface conditions at the site for the proposed construction;

- to interpret and evaluate the subsurface conditions with respect to the proposed construction; and

- to provide geotechnical engineering recommendations for groundwater considerations, foundation design, pavement design, stormwater management considerations, and site preparation.

This report presents an evaluation of site conditions on the basis of traditional geotechnical procedures for site characterization. The recovered samples were not examined, either visually or analytically, for chemical composition or environmental hazards. Universal Engineering Sciences would be pleased to perform these services, if you desire.

Our exploration was confined to the zone of soil likely to be stressed by the proposed construction. Our work did not address the potential for surface expression of deep geological conditions. This evaluation requires a more extensive range of field services than performed in this study. We will be pleased to conduct an investigation to evaluate the probable effect of the regional geology upon the proposed construction, if you desire.

2.3 FIELD EXPLORATION

A field exploration was initiated on November 2nd and completed November 5th, 2020. The approximate boring locations are shown on the attached Boring Location Plan in Appendix A. The approximate boring locations were determined in the field by our personnel a hand-held GPS unit and should be considered accurate only to the degree implied by the method of measurement used. Samples of the soils encountered will be held in our laboratory for your inspection for 60 days unless we are notified otherwise.

2.3.1 SPT Borings

To explore the subsurface conditions within the area of the proposed buildings, we located and drilled six (6) Standard Penetration Test (SPT) borings (B-14, B-15, B-16, B-17, B-18, B-19) to depths of 30 to 75 feet. To explore the subsurface conditions within the areas of the proposed bus loop and connector drive, expanded parking areas, new roadways, and walkways we located and drilled nine (9) SPT borings (B-1 to B-9) to depths of 10 feet. To explore the subsurface conditions below the proposed new tennis courts we located and drilled two (2) SPT borings (B-11, B-12) to depths of 15 feet. To explore the subsurface conditions within the area of the proposed pond we located and drilled two (2) SPT borings (B-12, B-13) to depths of 20 feet below the existing ground. All SPT borings were drilled and performed in general accordance with the methodology outlined in ASTM D 1586. A summary of this field procedure is included in Appendix A. Split-spoon soil samples recovered during performance of the borings were visually classified in the field and representative portions of the samples were transported to our laboratory for further evaluation.

2.3.2 Double Ring Infiltration Test

One (1) double ring infiltration test was performed adjacent to SPT boring B-12 (pond boring) at a depth of 0.5 feet below existing grade in general accordance with ASTM D3385, "Infiltration Rate of Soils using Double Ring Infiltrometers." In addition, two (2) relatively undisturbed Shelby tube samples were obtained horizontally and one (1) vertically within the proposed pond area adjacent to borings B-12 and B-13. The result of the double ring infiltration test and laboratory permeability tests are presented in Section 4.6. The procedures for the tests are presented in the Field Exploration Procedures in Appendix A.

2.4 LABORATORY TESTING

Representative soil samples obtained during our field exploration were returned to our office and classified by a geotechnical engineer. The samples were visually classified in general accordance with ASTM D 2488 (Unified Soil Classification System).

Eighteen (18) fines content tests, eighteen (18) moisture content tests, one (1) Atterberg Limits test, and three (3) falling head permeability tests were conducted in the laboratory on representative soil samples obtained from the borings. These tests were performed to aid in classifying the soils and to help quantify and correlate engineering properties. The results of these tests are presented on the Boring Logs in Appendix A. A brief description of the laboratory procedures used is also provided in Appendix A.

3.0 FINDINGS

3.1 SOIL SURVEY

Based on the Soil Survey for Nassau County, Florida, as prepared by the US Department of Agriculture Soil Conservation Service, the predominant predevelopment soil types at the site are identified as Hurricane-Pottsburg (6), Mandarin (10), Lynn Haven-Wesconnett-Leon (18), Ortega (20), Kingsferry (24), and Centenary (26).

A summary of characteristics of these soil series were obtained from the Soil Survey and is included in Table 1.

TABLE 1
Summary of Soil Survey Information

Soil Type	Constituents	Hydrologic Group	Natural Drainage	Soil Permeability (Inches/Hr)	Seasonal High Water Table
Hurricane (6)	0-68" Fine sand 68-80" Sand, fine sand, loamy sand	A	Somewhat Poorly Drained	0-68" > 6.0 68-80" 2.0-6.0	2.5 – 3.5

TABLE 1
Summary of Soil Survey Information

Soil Type	Constituents	Hydrologic Group	Natural Drainage	Soil Permeability (Inches/Hr)	Seasonal High Water Table
Pottsburg (6)	0-8" Fine sand 8-55" Sand, fine sand 55-80" Sand, fine sand, loamy sand	A/D	Poorly Drained	0-55" 6.0-20 55-80" 0.6-20	1.0 – 2.0
Mandarin (10)	0-7" Fine sand, sand 7-13" Sand, fine sand 13-18" Sand, fine sand, loamy sand, loamy fine sand 18-62" Loamy fine sand, loamy sand, sand, fine sand 62-80" Sand, fine sand, loamy sand, loamy fine sand	A	Somewhat Poorly Drained	0-20" 6.0-20 20-31" 0.6-2.0 31-80" 6.0-20	1.5 – 2.5
Wesconnett (18)	0-12" Fine sand 12-80" Fine sand, sand	A/D	Very Poorly Drained	0-2" 6.0 – 20 2-23" 0.6-6.0 32-44" 6.0 – 20 44-80" 0.6-6.0	0.0
Leon (18)	0-3" Mucky peat 3-8" Fine sand 8-17" Sand, fine sand 17-80" Sand, fine sand,	A/D	Very Poorly Drained	0-17" 6.0 – 20 17-80" 0.6-6.0	0.0
Ortega (20)	0-6" Fine sand 6-80" Fine sand, sand	A	Moderately Well Drained	0-80" 6.0-20	3.5 – 5.0
Kingsferry (24)	0-34" Fine sand 34-67" Sand, fine sand, loamy fine sand 67-80" Sand, fine sand	B/D	Very Poorly Drained	0-67" 2.0 – 6.0 67-80" 0.2 – 6.0	0.0
Centenary (26)	0-7" Fine sand 7-80" Sand, fine sand, loamy sand	A	Moderately Well Drained	0-66" 6.0 – 20 66-80" 2.0 – 6.0	3.5 – 5.0

3.2 SURFACE CONDITIONS

The site of the proposed project is located at the existing Yulee High School and Middle School in Yulee, Florida. The site is bordered to the north and south by residential homes and wooded to the west and east. The site visually appears to be sloping down from the southeast to southwest and south of the baseball fields a small bowl depression area was observed. The existing buildings and associated drives visually appear to be in relatively good condition with only minor cracking. There are existing wet retention ponds located on the southeast side of the schools and one on the northeast side. The rest of the site is mostly covered in maintained grass with baseball fields and tennis courts.

3.3 SUBSURFACE CONDITIONS

The boring locations and detailed subsurface conditions are illustrated in Appendix A: Boring Location Plan, Boring Profiles, and Boring Logs. It should be noted that soil conditions will vary away from and between boring locations. The classifications and descriptions shown on the logs are generally based upon visual characterizations of the recovered soil samples and a limited number of laboratory tests. Also, see Appendix A: Key to Boring Logs, for further explanation of the symbols and placement of data on the Boring Logs. Table 3: General Soil Profile, summarizes the soil conditions encountered.

TABLE 2
General Soil Profile

Typical depth (ft)		Soil Descriptions
From	To	
0.0	25	Loose to medium dense fine sand, fine sand with silt, and fine sand with clay (SP, SP-SM, SP-SC) with few very loose zones
25	72-73	Medium dense to dense fine sand and fine sand with clay (SP, SP-SC) with few loose clayey fine sand zones
72-73	75*	Hard limestone

* Termination Depth of Deepest Boring
( ) Indicates Unified Soil Classification

The groundwater level was recorded between depths of 1.8 to 8.0 feet below the existing ground surface. The variations in groundwater levels are likely due to topographical differentials and proximity to drainage features. It should be anticipated the groundwater level will fluctuate due to topography, seasonal climatic variations, surface water runoff patterns, construction operations, and other interrelated factors.

4.0 RECOMMENDATIONS

4.1 GENERAL

In this section of the report, we present our detailed recommendations for groundwater control, building foundation, pavement design, stormwater management considerations, site preparation, and construction related services. The following recommendations are made based upon a review of the attached soil test data, our understanding of the proposed construction, and experience with similar projects and subsurface conditions. We recommend that we be provided the opportunity to review the project plans and specifications to confirm that our recommendations have been properly interpreted and implemented. If the structural loadings or the building locations change significantly from those discussed previously, we request the opportunity to review and possibly amend our recommendations with respect to those changes. The discovery of any subsurface conditions during construction which deviate from those encountered in the borings should be reported to us immediately for observation, evaluation and recommendations.

4.2 GROUNDWATER CONSIDERATIONS

The groundwater table will fluctuate seasonally depending upon local rainfall. The rainy season in Northeast Florida is normally between June and September. Based upon our review of U.S.G.S. data, Nassau County Soils Survey, and regional hydrogeology, it is our opinion the seasonal high groundwater at the site will be approximately 1 to 1.5 feet above the measured water levels encountered at the time of our exploration.

Note, it is possible the estimated seasonal high groundwater levels will temporarily exceed these estimated levels during any given year in the future. Should impediments to surface water drainage exist on the site, or should rainfall intensity and duration, or total rainfall quantities exceed the normally anticipated rainfall quantities, groundwater levels may exceed our seasonal high estimates. We recommend positive drainage be established and maintained on the site during construction. We further recommend permanent measures be constructed to maintain positive drainage from the site throughout the life of the project. We recommend all foundation and pavement grade designs be based on the seasonal high groundwater conditions.

4.3 BUILDING FOUNDATIONS

Based on the results of our exploration, we consider the subsurface conditions at the site adaptable for support of the proposed building additions when constructed on a properly designed conventional shallow foundation system. Provided the site preparation and earthwork construction recommendations outlined in Section 4.5 of this report are performed, the following parameters may be used for foundation design.

4.3.1 Bearing Pressure

The maximum allowable net soil bearing pressure for use in shallow foundation design should not exceed 2,500 psf. Net bearing pressure is defined as the soil bearing pressure at the foundation bearing level in excess of the natural overburden pressure at that level. The foundations should be designed based on the maximum load which could be imposed by all loading conditions.

If designing foundations for canopies is required, special consideration must be given to the effect of wind loads on the foundations. The footings should be designed to provide adequate uplift resistance and stability against overturning. Should temporary wind load conditions cause footing edge pressures to exceed 3,300 psf or if any portion of the footings are in tension, additional evaluation will be required.

4.3.2 Foundation Size

The minimum widths recommended for any isolated column footings and continuous wall footings are 24 inches and 18 inches, respectively. Even though the maximum allowable soil bearing pressure may not be achieved, these width recommendations should control the minimum size of the foundations.

4.3.3 Bearing Depth

The exterior foundations should bear at a depth of at least 18 inches below the finished exterior grades and the interior foundations should bear at a depth of at least 12 inches below the finish floor elevation to provide confinement to the bearing level soils. It is recommended that stormwater be diverted away from the building exteriors to reduce the possibility of erosion beneath the exterior footings.

4.3.4 Bearing Material

Any foundations may bear in either the compacted suitable natural soils or compacted structural fill. The bearing level soils, after compaction, should exhibit densities equivalent to at least 95 percent of the Modified Proctor maximum dry density (ASTM D 1557) to a depth of at least one foot below the foundation bearing level.

4.3.5 Floor Slab

The floor slabs can be constructed as slab-on-grade members using a modulus of subgrade reaction (K) of 100 pci provided the subgrade materials are compacted as outlined in Section 4.5. It is recommended the floor slab bearing soils be covered with an impervious membrane to reduce moisture entry and floor dampness in accordance with the 2017 Florida Building Code, 6th Edition. A 10-mil thick plastic membrane is commonly used for this purpose. Care should be exercised not to tear the membrane during placement of reinforcing steel and concrete.

4.3.6 Settlement Estimates

Post-construction settlements of the structures will be influenced by several interrelated factors, such as (1) subsurface stratification and strength/compressibility characteristics; (2) footing size, bearing level, applied loads, and resulting bearing pressures beneath the foundations; and (3) site preparation and earthwork construction techniques used by the contractor. Our settlement estimates for the structures are based on the use of site preparation/earthwork construction techniques as recommended in Section 4.5 of this report. Any deviation from these recommendations could result in an increase in the estimated post-construction settlements of the structures.

Using the recommended maximum bearing pressure, the assumed maximum structural loads and the field data which we have correlated to geotechnical strength and compressibility characteristics of the subsurface soils, we estimate that total settlements of the structures could be on the order of one inch or less.

Differential settlements result from differences in applied bearing pressures and variations in the compressibility characteristics of the subsurface soils. Because of the general uniformity of the subsurface conditions and the recommended site preparation and earthwork construction techniques outlined in Section 4.5, we anticipate that differential settlements of the structures should be within tolerable magnitudes (½ inch or less). The estimated differential settlements are considered structurally tolerable; however, aesthetic cracking may occur. The project budget should account for any cosmetic repairs. However, differential settlements on the order of ½ to 1 inch could occur between the new foundations and existing foundations. The structural design of the addition should accommodate this possibility.

4.4 PAVEMENTS

4.4.1 General

A rigid or flexible pavement section could be used on this project. Flexible pavement combines the strength and durability of several layer components to produce an appropriate and cost-effective combination of available construction materials. Concrete pavement has the advantage of the ability to "bridge" over isolated soft areas, it requires less security lighting, and it typically has a longer service life than asphalt pavement. Disadvantages of rigid pavement include an initial higher cost and more difficult patching of distressed areas than occurs with flexible pavement.

4.4.2 Asphalt (Flexible) Pavements

We have recommended a flexible pavement section with a 20-year design life for use on this project. Because traffic loadings are commonly unavailable, we have generalized our pavement design into two groups. The group descriptions and the recommended component thicknesses are presented in Table 3: Summary of Pavement Component Recommendations. The thicknesses in Table 3 are based on a structural number analysis with the stated estimated daily traffic volume for a 20-year replacement design life. We have conservatively assumed a design subgrade LBR of 20 (Resilient Modulus of 7,500 psi) for this analysis and have additionally assumed a separation of at least 2 feet between the bottom of base and the seasonal high groundwater level.

TABLE 3 Summary of Pavement Component Recommendations				
Traffic Group	Maximum Traffic Loading	Component Thickness (inches)		
		Stabilized Subgrade	Base Course	Surface Course
Automobile parking lots and driveways - **standard duty**	Up to 300,000 E_{18}SAL	12	6	1.5
Truck parking lots and driveways - **heavy duty**	Up to 800,000 E_{18}SAL	12	8	2.0

4.4.2.1 Stabilized Subgrade

We recommend that subgrade materials be compacted in place according to the requirements in the "Site Preparation" section of this report. Further, beneath limerock base course, stabilize the subgrade materials to a minimum Limerock Bearing Ratio (LBR) of 40, as specified by the most recent version of the Florida Department of Transportation (FDOT) "Standard Specifications for Roadway and Bridge Construction" (SSRBC) requirements for Type B Stabilized Subgrade (FDOT-SSRBC, Section 160). The subgrade material should be compacted to at least 98 percent of the Modified Proctor maximum dry density (ASTM D 1557, AASHTO T-180) value.

The stabilized subgrade can be a blend of existing soil and imported material such as limerock. If a blend is proposed, we recommend that the contractor perform a mix design to find the optimum mix proportions.

The primary function of stabilized subgrade beneath the base course is to provide a stable and firm subgrade so that the limerock can be properly and uniformly placed and compacted. Depending upon the soil type, the subgrade material may have sufficient stability to provide the needed support without additional stabilizing material. Generally, sands with silt or clay should have sufficient stability and may not require additional stabilizing material. Conversely, relatively "clean" sand will not provide sufficient stability to adequately construct the limerock base course. Universal Engineering Sciences should observe the soils exposed on the finish grades to evaluate whether or not additional stabilization will be required beneath the base course.

4.4.2.2 Base Course

We recommend the base course consist of locally available limerock complying with the requirements of the most recent version of the FDOT Standard Specifications for Road and Bridge Construction (SSRBC), Section 200 and Section 911. The limerock should be mined or supplied from an FDOT approved source. Place the limerock in maximum 6-inch thick loose lifts and compact each lift to a minimum density of 98 percent of the Modified Proctor maximum dry density (ASTM D1557/AASHTO T-180).

Alternatively, we believe locally available crushed concrete base of equal thickness could be substituted for the limerock. Crushed concrete should be supplied by an FDOT approved plant with quality control procedures. Crushed concrete should meet the requirements for Recycled Concrete Aggregate (RCA) of the most recent FDOT SSRBC Sections 200 and 911.

The base shall have an average LBR of not less than 100 and should be compacted to at least 98 percent of the Modified Proctor maximum dry density (ASTM D 1557, AASHTO T-180) value. The LBR value of material produced at a particular source shall be determined in accordance with an approved quality control procedure.

Testing shall be performed at the following frequencies:

- Perform in-place density on the base at a frequency of 1 test per 300 linear foot of roadway or 5,000 square feet of pavement.

- Perform Limerock Bearing Ratio tests at a frequency of 1 test per visual change in material and a minimum of 1 test per 15,000 square feet of pavement.

- Engineer should perform a final visual base inspection prior to placement of prime or tack coat and paving.

4.4.2.3 Wearing Surface

For the roadways, we recommend that the surfacing consist of FDOT SuperPave (SP) asphaltic concrete. The surface course should consist of FDOT SP-9.5 fine mix for the proposed light-duty area. The heavy duty area can consist of a single 2-inch lift of SP-12.5 or 2 layers of SP-9.5 placed in 1-inch lifts. The asphalt concrete should be placed within the allowable lift thicknesses for fine Type SP mixes per the latest edition of FDOT, Standard Specifications for Road and Bridge Construction, Section 334-1.4 Thickness.

The asphaltic concrete should be compacted to an average field density of 93 percent of the laboratory maximum density determined from specific gravity (G_{mm}) methods, with an individual test tolerance of **+2 percent and -1.2% of the design G_{mm}**. Specific requirements for the SuperPave asphaltic concrete structural course are outlined in the latest edition of FDOT, Standard Specifications for Road and Bridge Construction, Section 334.

Please note, if the Designer (or Contract Documents) limits compaction to the static mode only or lifts are placed one-inch thick, then the average field density should be 92 percent, with an individual test tolerance of + 3 percent, and -1.2% of the design G_{mm}.

After placement and field compaction, the wearing surface should be cored to evaluate material thickness and density. Cores should be obtained at frequencies of at least one (1) core per 5,000 square feet of placed pavement, every 250 feet of lineal roadway, or a minimum of two (2) cores per day's production.

4.4.3 Concrete (Rigid) Pavements

Concrete pavement is a rigid pavement that transfers much lighter wheel loads to the subgrade soils than a flexible asphalt pavement. For a concrete pavement subgrade, we recommend using the existing surficial sands or recommend clean fine sand fill (SP), densified to at least 98 percent of Modified Proctor test maximum dry density (ASTM D 1557) without additional stabilization, with the following stipulations:

1. Subgrade soils must be densified to at least 98 percent of Modified Proctor test maximum dry density (ASTM D 1557) to a depth of at least 2 feet prior to placement of concrete.

2. The surface of the subgrade soils must be smooth, and any disturbances or wheel rutting corrected prior to placement of concrete.

3. The subgrade soils must be moistened prior to placement of concrete.

4. Concrete pavement thickness should be uniform throughout, with exception to thickened edges (curb or footing).

5. The bottom of the pavement should be separated from the estimated typical wet season groundwater level by at least 18 inches.

Our recommendations for slab thickness for standard duty and heavy duty concrete pavements are based on a) subgrade soils densified to 98 percent of the Modified Proctor maximum dry density (ASTM D 1557), b) modulus of subgrade reaction (k) equal to 200 pounds per cubic inch, c) a 20-year design life, and d) the previously stated traffic conditions in Section 4.4.2, we recommend using the design shown in Table 4 for standard duty concrete pavements.

TABLE 4
Standard Duty (Unreinforced) Concrete Pavement

Minimum Pavement Thickness	Maximum Control Joint Spacing	Recommended Sawcut Depth
5 Inches	10 Feet x 10 Feet	1¼ Inches

Our recommended design for heavy duty concrete pavement is shown in Table 5 below.

TABLE 5 Heavy Duty (Unreinforced) Concrete Pavement		
Minimum Pavement Thickness	Maximum Control Joint Spacing	Recommended Sawcut Depth
6 Inches	12 Feet x 12 Feet	1 ½ Inches

We recommend using concrete with minimum 28-day compressive strength of 4,000 psi and a minimum 28-day flexural strength (modulus of rupture) of at least 600 pounds per square inch, based on 3rd point loading of concrete beam test samples. Layout of the sawcut control joints should form square panels, and the depth of sawcut joint should be at least ¼ of the concrete slab thickness. The joints should be sawed within six hours of concrete placement or as soon as the concrete has developed sufficient strength to support workers and equipment. We recommend allowing Universal to review and comment on the final concrete pavement design, including section and joint details (type of joints, joint spacing, etc.), prior to the start of construction.

For further details on concrete pavement construction, please reference the "Guide to Jointing on Non-Reinforced Concrete Pavements" published by the Florida Concrete and Products Associates, Inc., and "Building Quality Concrete Parking Areas", published by the Portland Cement Association.

4.4.4 Effects of Groundwater

One of the most critical factors influencing pavement performance in Northeast Florida is the relationship between the pavement subgrade and the seasonal high groundwater level. Many roadways and parking areas have been damaged as a result of deterioration of the base conditions and/or the base/surface course bond. We recommend that the seasonal high groundwater and the bottom of the flexible pavement limerock base course be separated by at least 24 inches. We recommend a separation of at least 18 inches below the bottom of a rigid concrete pavement or below a flexible pavement with a crushed concrete base. If this separation cannot be established and maintained by grading and surface drainage improvements, permanent groundwater control measures (underdrains) will be required.

4.4.5 Curbing

We recommend that curbing around the landscaped sections adjacent to the parking areas and driveways be constructed with full-depth curb sections. Using extruded curb sections which lie directly on top of the final asphalt level, or eliminating the curbing entirely, can allow migration of irrigation water from the landscape areas to the interface between the asphalt and the base. This migration often causes separation of the wearing surface from the base and subsequent rippling and pavement deterioration. Topsoil placed behind curbing in landscaped areas should be limited to 6-inch vertical thickness within five feet of flexible pavement.

4.4.6 Construction Traffic

Light duty roadways and incomplete pavement sections will not perform satisfactorily under construction traffic loadings. We recommend that construction traffic (construction equipment, concrete trucks, sod trucks, garbage trucks, dump trucks, etc.) be re-routed away from these roadways or that the pavement section be designed for these loadings.

4.5 SITE PREPARATION

We recommend normal, good practice site preparation procedures. These procedures include: clearing the construction areas, removing/relocating existing utilities, stripping the site of vegetation and topsoil, compacting the subgrade, and placing necessary fill to grade with engineered fill. A more detailed synopsis of this work is as follows:

1. Prior to construction, the location of any existing underground utility lines within the construction area should be established. Provisions should then be made to relocate interfering utilities to appropriate locations. It should be noted that if underground pipes are not properly removed or plugged, they may serve as conduits for subsurface erosion which may subsequently lead to excessive settlement of overlying structure(s).

2. The groundwater level was recorded between depths of 1.8 to 8.0 feet below the existing ground surface. We estimate the seasonal high groundwater level will be encountered approximately 1.0 to 1.5 feet above the measured groundwater level at the time of our exploration. The groundwater level should be maintained at least 2 feet below any excavations and the surface of any vibratory compaction procedures. We anticipate that surface water management could be needed if the construction occurs during a relatively wet climatic period.

3. Any required surface stripping and root raking should be performed within and 5 feet beyond the perimeter of the proposed building areas and within and 3 feet beyond the perimeter of the proposed paved areas. Expect typical stripping at this site to a depth of 12 inches more or less.

4. Compact the subgrade from the surface with a vibratory roller operating until you obtain a minimum density of at least 95 percent of the Modified Proctor maximum dry density (ASTM D-1557), to a depth of 1 foot below the compacted surface. Typically, the soils should exhibit moisture contents within ± 2 percent of the Modified Proctor optimum moisture content during compaction. A minimum of eight (8) complete coverages (in perpendicular directions) should be made with the roller to improve the uniformity and increase the density of the underlying sandy soils.

Should the bearing level soils experience pumping and soil strength loss during the compaction operations, compaction work should be immediately terminated and (1) the disturbed soils removed and backfilled with dry structural fill soils which are then compacted, or (2) the excess pore pressures within the disturbed soils allowed to dissipate before recompaction.

5. Care should be exercised to avoid damaging any nearby structures while the compaction operation is underway. Prior to commencing compaction, occupants of adjacent structures should be notified and the existing conditions of the structures be documented with photographs and survey (if deemed necessary). Compaction should cease if deemed detrimental to adjacent structures. Universal Engineering Sciences can provide vibration monitoring services to help document and evaluate the effects of the surface compaction operation on existing structures. In the absence of vibration monitoring it is recommended the vibratory roller remain a minimum of 50 feet from existing structures. Within this zone, use of a bulldozer or a vibratory roller operating in the static mode is recommended.

6. Test the subgrade for compaction at a frequency of not less than one test per 2,500 square feet per lift in the building areas, or at a minimum of two tests per building, whichever is greater. In paved areas, perform compliance tests at a frequency of not less than one test per 10,000 square feet per lift, or at a minimum of two test locations, whichever is greater.

7. Place fill material, as required. The fill should consist of "clean," fine sand with less than 5 percent soil fines. You may use fill materials with soil fines between 5 and 12 percent, but strict moisture control may be required. Typically, the soils should exhibit moisture contents within ± 2 percent of the Modified Proctor optimum moisture content during compaction. Place fill in uniform 10- to 12-inch loose lifts and compact each lift to a minimum density of 95 percent of the Modified Proctor maximum dry density.

   The top 12 inches of fill beneath flexible pavement or the top 24 inches of fill beneath rigid pavement areas should be compacted to 98 percent of the Modified Proctor maximum dry density. For flexible pavement areas, stabilize this zone as necessary as recommended in Section 4.4.2, to obtain a minimum LBR of 40.

8. Perform compliance tests within the fill/backfill at a frequency of not less than one test per 2,500 square feet per lift in the building areas, or at a minimum of two tests per building, whichever is greater. In paved areas, perform compliance tests at a frequency of not less than one test per 10,000 square feet per lift, or at a minimum of two test locations, whichever is greater.

9. Test all footing cuts for compaction to a depth of 1 foot. We recommend you conduct density testing in every column footing, and every 100 linear feet in wall footings. Recompaction of the foundation excavation bearing level soils, if loosened by the excavation process, can probably be achieved by making several coverages with a light weight walk-behind vibratory sled or roller.

4.6 STORMWATER CONSIDERATION

4.6.1 Fill Suitability

Based on the borings performed in the stormwater management areas (B-12, B-13), the soils described as fine sand, fine sand with silt, and fine sand with clay (SP, SP-SM, SP-SC) as encountered throughout the 20-foot boring termination deths are considered suitable for use as structural fill. It should be understood that soils excavated from below the water table may be excessively wet and may require stockpiling or spreading to dry prior to placement and compaction. If soils deviate from the encountered material, notify us immediately for observation, evaluation and further recommendations.

4.6.2 Hydraulic Conductivity

Hydraulic conductivity testing for the relatively undisturbed sample from borings B-12 and B-13 indicated horizontal permeability rates of 2.6 and 3.2 ft/day, respectively. In addition, boring B-13 indicated a vertical permeability rate of 7.7 ft/day. The Shelby tube samples were obtained at a depth of 6 inches horizontally and vertically for each sample. The results are shown on the attached Boring Logs. Based on common practice, these values can be considered the saturated infiltration rate.

4.6.3 Infiltration Rate

The double ring infiltrometer testing indicated an infiltration rate at boring B-12 of 18.2 ft/day. Based on common practice, this value can be considered the unsaturated vertical infiltration rate in some groundwater models. The rates for the boring locations are shown on the attached Boring Logs.

The coefficient of permeability from the laboratory test and the infiltration rate from the double ring infiltrometer test are intended to provide an indication of the soils drainage characteristics. The actual exfiltration rates may be different due to pond geometry, soil stratification, retention volume and groundwater mounding effects.

4.6.4 Seasonal High Groundwater

The groundwater level was recorded at depths of 1.8 feet below the existing ground surface in the proposed retention pond area. We estimate the seasonal high groundwater table will occur approximately 1 foot below the exiting ground level at the time of our exploration.

4.7 RETAINING WALL

Assuming the retaining wall and the subsurface wall will be smooth concrete, we recommend using the following parameters for the upper 3 feet of in-situ sands and/or on-site and imported free draining fine sand backfill soil compacted to 95 percent of the Modified Proctor test maximum dry density for your retaining wall design.

TABLE 6

Lateral Earth Pressure Design Parameters (Level Sand Backfill)*

Design Parameter	Recommended Value
At-rest Earth Pressure Coefficient, Ko	0.5
Active Earth Pressure Coefficient, Ka	0.33
Passive Earth Pressure Coefficient, Kp	3.0
Wet Unit Soil Weight (pounds per cubic foot - pcf)	115
Submerged Unit Weight of Soil (pcf)	52
Coefficient of Friction (sliding)	0.4
Angle of Internal Friction, Φ	30 degrees

* For sloping backfill, values must be adjusted.

The Table 3 values do not include a factor of safety and therefore, the designer should incorporate an appropriate factor of safety (note that uplift and lateral hydrostatic pressures could be exerted on the structure during the time the groundwater level behind the walls is at peak levels from natural or man-induced causes. These forces should also be included in the proposed design). Retaining walls and subsurface walls should be provided with appropriate wall drains/underdrains to prevent water from accumulating and exerting excessive hydrostatic pressures. Also, retaining walls with adjacent sloping earth embankments or structural loadings may require special considerations.

Again, the above parameters apply to the backfill consisting of on-site sandy soils or imported fine sand fill with less than 10 percent soil fines. Variations of these values may occur within deeper site soils and other soil types imported for use as fill.

4.8 CONSTRUCTION RELATED SERVICES

We recommend the owner retain Universal Engineering Sciences to perform construction materials tests and observations on this project. Field tests and observations include verification of foundation and pavement subgrades by performing quality assurance tests on the placement of compacted structural fill and pavement courses. We can also provide concrete testing, pavement section testing, structural steel testing, and general construction observation services.

The geotechnical engineering design does not end with the advertisement of the construction documents. The design is an on-going process throughout construction. Because of our familiarity with the site conditions and the intent of the engineering design, we are most qualified to address problems that might arise during construction in a timely and cost-effective manner.

5.0 LIMITATIONS

Our geotechnical exploration has been performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. Universal Engineering (UES) is not responsible for any independent conclusions, interpretation, opinions or recommendations made by others based on the data contained in this report.

This report does not reflect any variations which may occur away from the soil borings. The discovery of any site or subsurface condition during construction which deviates from the data obtained during this geotechnical exploration should be reported to us for our evaluation. Also, in the event of any change to the location of the structure, please contact us so that we can review our recommendations.

During the early stages of most construction projects, geotechnical issues not addressed in this report may arise. Because of the natural limitations inherent in working with the subsurface, it is not possible for a geotechnical engineer to predict and address all possible problems. An Association of Engineering Firms Practicing in the Geosciences (ASFE) publication, "Important Information About Your Geotechnical Engineering Report" appears in Appendix B, and will help explain the nature of geotechnical issues.

Further, we present documents in Appendix B: Constraints and Restrictions, to bring to your attention the potential concerns and the basic limitations of a typical geotechnical report and the General Conditions under which our services are provided.

APPENDIX A

BORING LOCATION PLAN
BORING PROFILES
BORING LOGS
KEY TO BORING LOGS
FIELD EXPLORATION PROCEDURES
LABORATORY TESTING PROCEDURES

North

B-11
B-10
B-2
B-1
B-3
B-19
B-17
B-18
B-14
B-16
B-15
B-4
B-5
B-12
B-13
B-9
B-8
B-7
B-6

GRAPHIC SCALE

250' 0 125' 250' 500'

(IN FEET)

LEGEND

SPT BORING LOCATIONS

CLIENT:
R. DEAN SCOTT, ARCHITECT, INC.

DRAWN BY: TW | DATE: 11/25/20
CHECKED BY: PM | DATE: 11/25/20
SCALE: 1"= 250'
PROJECT NO: 0930.2000219.0000 | REPORT NO: 1821965

GEOTECHNICAL EXPLORATION
YULEE MIDDLE SCHOOL & HIGH SCHOOL
YULEE, FLORIDA

BORING LOCATION PLAN

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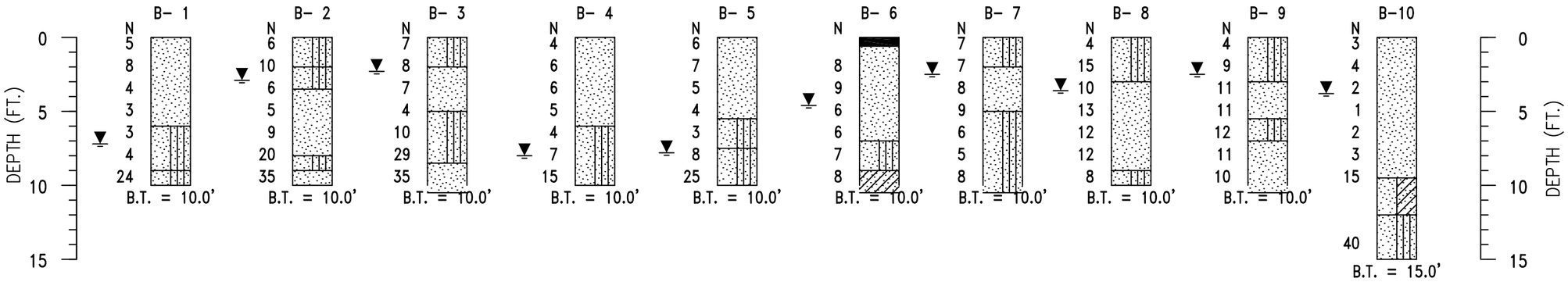
PAGE NO:
FIGURE A-1



LEGEND

- Asphalt and Limerock
- Sand (SP)
- Clayey Sand (SC)
- Sand with Silt (SP–SM)
- Sand with Clay (SP–SC)
- Limestone
- Groundwater Table

BT Boring Termination Depth

N SPT Blow Count

CLIENT: R. DEAN SCOTT, ARCHITECT, INC.

DRAWN BY: TW | DATE: 11/25/20

CHECKED BY: PM | DATE: 11/25/20

SCALE: AS SHOWN

PROJECT NO: 0930.2000219.0000 | REPORT NO: 1821965

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YULEE, FLORIDA

SOIL BORING PROFILES

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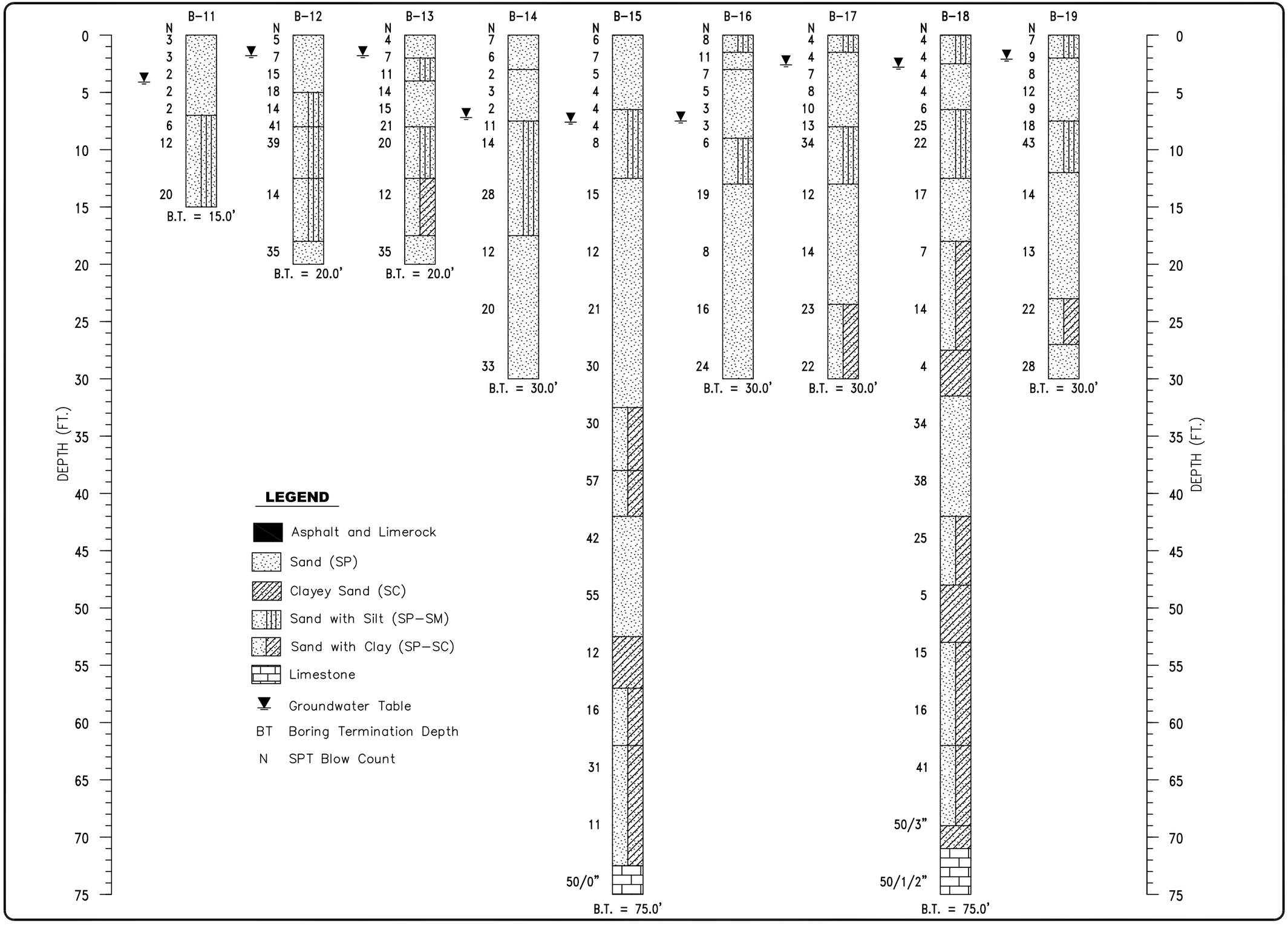
PAGE NO:
FIGURE A–2



CLIENT: R. DEAN SCOTT, ARCHITECT, INC.

DRAWN BY: TW | DATE: 11/25/20

CHECKED BY: PM | DATE: 11/25/20

SCALE: AS SHOWN

PROJECT NO: 0930.2000219.0000 | REPORT NO: 1821965

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YULEE, FLORIDA

SOIL BORING PROFILES

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PAGE NO:

FIGURE A-3

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BORING LOG

PROJECT NO.:	0930.2000219.0000
REPORT NO.:	1821965
PAGE:	A-1

PROJECT: GEOTECHNICAL EXPLORATION
YULEE MIDDLE SCHOOL & HIGH SCHOOL
YULEE, FLORIDA

BORING DESIGNATION: **B- 1** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: R. DEAN SCOTT, ARCHITECT, INC.

LOCATION: SEE BORING LOCATION PLAN

REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 7.2
DATE OF READING: 11/05/20
EST. W.S.W.T. (ft):

DATE STARTED: 11/3/20
DATE FINISHED: 11/3/20
DRILLED BY: S.TORRES
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./DAY)	ORG. CONT. (%)
0												
		1-2-3	5			Loose to very loose light brown fine SAND (SP)						
		3-4-4	8									
		2-2-2	4									
5												
		2-2-1	3									
		1-1-2	3	▼		Very loose dark brown fine SAND with Silt (SP-SM)						
		1-1-3	4									
10		4-8-16	24			Medium dense dark brown fine SAND with Silt (SP-SM)						

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BORING LOG

PROJECT NO.:	0930.2000219.0000
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YULEE MIDDLE SCHOOL & HIGH SCHOOL
YULEE, FLORIDA

BORING DESIGNATION: **B- 2** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: R. DEAN SCOTT, ARCHITECT, INC.

LOCATION: SEE BORING LOCATION PLAN

REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 2.9
DATE OF READING: 11/05/20
EST. W.S.W.T. (ft):

DATE STARTED: 11/3/20
DATE FINISHED: 11/3/20
DRILLED BY: S.TORRES
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0												
		1-3-3	6			Loose dark gray fine SAND with Silt and few Roots (SP-SM)						
		3-4-6	10	▼		Loose gray-brown fine SAND with Silt (SP-SM)						
		3-3-3	6			Loose light brown fine SAND (SP)						
5		2-3-2	5									
		4-4-5	9									
		7-9-11	20			Medium dense dark red-brown fine SAND with Silt (SP-SM)						
10		11-14-21	35			Dense red-brown fine SAND (SP)						

BORING_LOG 0930.2000219.0000 YULEE MIDDLE SCHOOL & HIGH SCHOOL.GPJ UNIENGSC.GDT 12/1/20

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	0930.2000219.0000
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PAGE:	A-3

PROJECT: GEOTECHNICAL EXPLORATION
YULEE MIDDLE SCHOOL & HIGH SCHOOL
YULEE, FLORIDA

BORING DESIGNATION: **B- 3** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: R. DEAN SCOTT, ARCHITECT, INC.

LOCATION: SEE BORING LOCATION PLAN

REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 2.3
DATE OF READING: 11/05/20
EST. W.S.W.T. (ft):

DATE STARTED: 11/3/20
DATE FINISHED: 11/3/20
DRILLED BY: S.TORRES
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./DAY)	ORG. CONT. (%)
0												
		1-2-5	7	▼		Loose gray-brown fine SAND with Silt (SP-SM)						
		3-3-5	8			Loose light brown fine SAND (SP)						
		2-3-4	7									
5												
		2-2-2	4			Loose to medium dense dark brown fine SAND with Silt (SP-SM)						
		3-4-6	10									
		5-11-18	29			Medium dense to dense red-brown fine SAND (SP)						
10		10-13-22	35									

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BORING LOG

PROJECT NO.:	0930.2000219.0000
REPORT NO.:	1821965
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PROJECT: GEOTECHNICAL EXPLORATION
YULEE MIDDLE SCHOOL & HIGH SCHOOL
YULEE, FLORIDA

BORING DESIGNATION: **B- 4** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: R. DEAN SCOTT, ARCHITECT, INC.

LOCATION: SEE BORING LOCATION PLAN

REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 8.0
DATE OF READING: 11/05/20
EST. W.S.W.T. (ft):

DATE STARTED: 11/3/20
DATE FINISHED: 11/3/20
DRILLED BY: S.TORRES
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0												
		1-2-2	4			Loose light brown fine SAND (SP)						
		3-3-3	6									
		3-3-3	6									
5												
		2-2-3	5									
		2-2-2	4	▼		Loose to medium dense dark brown fine SAND with Silt (SP-SM)						
		3-3-4	7									
10												
		6-7-8	15									

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	0930.2000219.0000
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PROJECT: GEOTECHNICAL EXPLORATION
YULEE MIDDLE SCHOOL & HIGH SCHOOL
YULEE, FLORIDA

BORING DESIGNATION: **B- 5** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: R. DEAN SCOTT, ARCHITECT, INC.

LOCATION: SEE BORING LOCATION PLAN

REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 7.8
DATE OF READING: 11/05/20
EST. W.S.W.T. (ft):

DATE STARTED: 11/3/20
DATE FINISHED: 11/3/20
DRILLED BY: S.TORRES
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./DAY)	ORG. CONT. (%)
0												
		1-2-4	6			Loose light brown fine SAND (SP)						
		3-3-4	7									
		3-2-3	5									
5												
		2-1-3	4			Very loose dark brown fine SAND with Silt (SP-SM)						
		2-1-2	3	▼								
		2-3-5	8			Loose to medium dense dark brown fine SAND with Silt (SP-SM)						
10		5-9-16	25									

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PROJECT: GEOTECHNICAL EXPLORATION
YULEE MIDDLE SCHOOL & HIGH SCHOOL
YULEE, FLORIDA

BORING DESIGNATION: **B- 6** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: R. DEAN SCOTT, ARCHITECT, INC.

LOCATION: SEE BORING LOCATION PLAN

REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 4.6
DATE OF READING: 11/05/20
EST. W.S.W.T. (ft):

DATE STARTED: 11/4/20
DATE FINISHED: 11/4/20
DRILLED BY: S.TORRES
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./DAY)	ORG. CONT. (%)
0						ASPHALT (2")						
						LIMEROCK (5-1/2")						
						Loose light brown to dark brown fine SAND (SP)						
		4-4-4	8									
		4-4-5	9	▼								
5												
		3-3-3	6									
		2-3-4	6			Loose dark brown fine SAND with Silt (SP-SM)						
		2-3-4	7			Loose gray Clayey fine SAND (SC)						
10		3-3-5	8									

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BORING LOG

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REPORT NO.:	1821965
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PROJECT: GEOTECHNICAL EXPLORATION
YULEE MIDDLE SCHOOL & HIGH SCHOOL
YULEE, FLORIDA

BORING DESIGNATION: **B- 7** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: R. DEAN SCOTT, ARCHITECT, INC.

LOCATION: SEE BORING LOCATION PLAN

REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 2.5
DATE OF READING: 11/05/20
EST. W.S.W.T. (ft):

DATE STARTED: 11/2/20
DATE FINISHED: 11/2/20
DRILLED BY: S.TORRES
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./DAY)	ORG. CONT. (%)
0												
		1-3-4	7			Loose gray-brown fine SAND with Silt (SP-SM)						
		3-4-3	7	▼		Loose light brown to brown fine SAND (SP)						
		3-4-4	8									
5												
		3-4-5	9			Loose dark brown fine SAND with Silt (SP-SM)						
		3-3-3	6									
		2-2-3	5									
10												
		2-4-4	8									

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BORING LOG

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REPORT NO.:	1821965
PAGE:	A-8

PROJECT: GEOTECHNICAL EXPLORATION
YULEE MIDDLE SCHOOL & HIGH SCHOOL
YULEE, FLORIDA

BORING DESIGNATION: **B- 8** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: R. DEAN SCOTT, ARCHITECT, INC.

LOCATION: SEE BORING LOCATION PLAN

REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 3.6
DATE OF READING: 11/05/20
EST. W.S.W.T. (ft):

DATE STARTED: 11/2/20
DATE FINISHED: 11/2/20
DRILLED BY: S.TORRES
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./DAY)	ORG. CONT. (%)
0												
		1-2-2	4			Loose to medium dense brown fine SAND with Silt (SP-SM)						
		3-6-9	15	▼								
		6-5-5	10			Loose to medium dense light gray to light brown fine SAND (SP)						
5												
		4-5-8	13									
		5-6-6	12									
		5-5-7	12									
						Loose brown fine SAND with Silt (SP-SM)						
10		4-4-4	8									

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BORING LOG

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PROJECT: GEOTECHNICAL EXPLORATION
YULEE MIDDLE SCHOOL & HIGH SCHOOL
YULEE, FLORIDA

BORING DESIGNATION: **B- 9** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: R. DEAN SCOTT, ARCHITECT, INC.

LOCATION: SEE BORING LOCATION PLAN

REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 2.5
DATE OF READING: 11/05/20
EST. W.S.W.T. (ft):

DATE STARTED: 11/2/20
DATE FINISHED: 11/2/20
DRILLED BY: S.TORRES
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0												
		1-1-3	4	▼		Loose brown fine SAND with Silt (SP-SM)						
		3-4-5	9									
		4-6-5	11			Medium dense light gray fine SAND (SP)						
5												
		4-5-6	11			Medium dense dark brown fine SAND with Silt (SP-SM)						
		4-5-7	12			Medium dense to loose light brown to brown fine SAND (SP)						
		4-5-6	11									
10												
		3-4-6	10									

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BORING LOG

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PROJECT: GEOTECHNICAL EXPLORATION
YULEE MIDDLE SCHOOL & HIGH SCHOOL
YULEE, FLORIDA

BORING DESIGNATION: **B-10** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: R. DEAN SCOTT, ARCHITECT, INC.

LOCATION: SEE BORING LOCATION PLAN

REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 3.8
DATE OF READING: 11/05/20
EST. W.S.W.T. (ft):

DATE STARTED: 11/2/20
DATE FINISHED: 11/2/20
DRILLED BY: S.TORRES
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./DAY)	ORG. CONT. (%)
0												
		1-1-2	3			Very loose to loose light brown to dark brown fine SAND (SP)						
		3-2-2	4	▼								
		1-1-1	2									
5		1/12"-1	1				3.0	31.4				
		WOH-1-1	2									
		1-2-1	3				3.8	26.6				
10		2-4-11	15			Medium dense dark brown fine SAND with Silt with few Organics (SP-SM)						
						Dense brown fine SAND with Silt (SP-SM)						
15		13-20-20	40									

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PROJECT: GEOTECHNICAL EXPLORATION
YULEE MIDDLE SCHOOL & HIGH SCHOOL
YULEE, FLORIDA

BORING DESIGNATION: **B-11** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: R. DEAN SCOTT, ARCHITECT, INC.

LOCATION: SEE BORING LOCATION PLAN

REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 4.1
DATE OF READING: 11/05/20
EST. W.S.W.T. (ft):

DATE STARTED: 11/2/20
DATE FINISHED: 11/2/20
DRILLED BY: S.TORRES
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./DAY)	ORG. CONT. (%)
0												
		1-1-2	3			Very loose light brown fine SAND (SP)						
		3-2-1	3									
		1-1-1	2	▼			3.0	16.8				
5		1-1-1	2									
		1-1-1	2			Loose to medium dense dark brown to brown fine SAND with Silt (SP-SM)						
		3-3-3	6									
10		5-5-7	12									
15		7-10-10	20									

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PROJECT: GEOTECHNICAL EXPLORATION
YULEE MIDDLE SCHOOL & HIGH SCHOOL
YULEE, FLORIDA

BORING DESIGNATION: **B-12** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: R. DEAN SCOTT, ARCHITECT, INC.

LOCATION: SEE BORING LOCATION PLAN

REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 1.8
DATE OF READING: 11/05/20
EST. W.S.W.T. (ft):

DATE STARTED: 11/2/20
DATE FINISHED: 11/2/20
DRILLED BY: S.TORRES
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./DAY)	ORG. CONT. (%)
0												
		1-2-3	5	▼		Loose to medium dense gray fine SAND (SP)	2.5	16.1			Kv=18.2 Kh=2.6	
		3-3-4	7									
		5-6-9	15				4.2	22.5				
5		8-9-9	18			Medium dense dark brown fine SAND with Silt (SP-SM)	7.2	33.0				
		2-4-10	14									
		8-16-25	41			Dense dark red-brown fine SAND with Silt and trace weakly cemented Sand (SP-SM)						
10		9-19-20	39									
						Medium dense brown fine SAND with Silt (SP-SM)						
15		5-5-9	14				6.0	27.9				
						Dense light gray fine SAND (SP)						
20		8-16-19	35									

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PROJECT: GEOTECHNICAL EXPLORATION
YULEE MIDDLE SCHOOL & HIGH SCHOOL
YULEE, FLORIDA

BORING DESIGNATION: **B-13** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: R. DEAN SCOTT, ARCHITECT, INC.

LOCATION: SEE BORING LOCATION PLAN

REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 1.8
DATE OF READING: 11/05/20
EST. W.S.W.T. (ft):

DATE STARTED: 11/2/20
DATE FINISHED: 11/2/20
DRILLED BY: S.TORRES
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./DAY)	ORG. CONT. (%)
0												
		1-2-2	4	▼		Loose gray fine SAND (SP)	2.2 3.8	20.7 25.6			Kv=7.7 Kh=3.2	
		3-4-3	7			Loose dark brown fine SAND with Silt with trace Roots (SP-SM)						
		4-5-6	11			Medium dense brown fine SAND (SP)						
5		6-7-7	14				4.9	22.6				
		3-7-8	15									
		7-10-11	21			Medium dense dark red-brown fine SAND with Silt and few cemented sand (SP-SM)						
10		8-8-12	20				5.4	26.4				
						Medium dense light brown fine SAND with Clay (SP-SC)						
15		4-5-7	12				7.5	27.7				
						Dense gray fine SAND (SP)						
20		7-14-21	35									

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BORING LOG

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PROJECT: GEOTECHNICAL EXPLORATION
YULEE MIDDLE SCHOOL & HIGH SCHOOL
YULEE, FLORIDA

BORING DESIGNATION: **B-14** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: R. DEAN SCOTT, ARCHITECT, INC.

LOCATION: SEE BORING LOCATION PLAN

REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 7.2
DATE OF READING: 11/05/20
EST. W.S.W.T. (ft):

DATE STARTED: 11/3/20
DATE FINISHED: 11/3/20
DRILLED BY: S.TORRES
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0												
	X	2-3-4	7			Loose light brown fine SAND (SP)						
	X	2-3-3	6									
	X	2-1-1	2			Very loose light to dark brown fine SAND (SP)	1.8	5.9				
5	X	2-1-2	3									
	X	1-1-1	2	▼			4.2	30.4				
	X	2-5-6	11			Medium dense dark brown fine SAND with Silt (SP-SM)						
10	X	3-6-8	14									
15	X	7-13-15	28									
						Medium dense to dense light brown fine SAND (SP)						
20	X	3-4-8	12									
25	X	4-8-12	20									
30	X	7-12-21	33									

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PROJECT: GEOTECHNICAL EXPLORATION
YULEE MIDDLE SCHOOL & HIGH SCHOOL
YULEE, FLORIDA

BORING DESIGNATION: **B-15** SHEET: **1 of 2**
SECTION: TOWNSHIP: RANGE:

CLIENT: R. DEAN SCOTT, ARCHITECT, INC.

LOCATION: SEE BORING LOCATION PLAN

REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 7.6
DATE OF READING: 11/05/20
EST. W.S.W.T. (ft):

DATE STARTED: 11/4/20
DATE FINISHED: 11/4/20
DRILLED BY: S.TORRES
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./DAY)	ORG. CONT. (%)
0												
		1-2-4	6			Loose light brown to light gray-brown fine SAND (SP)						
		3-3-4	7									
		3-2-3	5									
5							0.9	5.1				
		2-2-2	4									
		2-2-2	4	▼		Loose brown to dark brown fine SAND with Silt (SP-SM)						
		1-2-2	4									
10		2-3-5	8									
						Medium dense gray-brown fine SAND (SP)						
15		4-5-10	15									
20		3-5-7	12									
25		5-8-13	21									
30		9-12-18	30									
						Medium dense gray fine SAND with Clay (SP-SC)						
35		11-13-17	30									
						Very dense gray fine SAND with Clay (SP-SC)						
40		15-25-32	57									

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BORING LOG

PROJECT NO.:	0930.2000219.0000
REPORT NO.:	1821965
PAGE:	A-16

PROJECT: GEOTECHNICAL EXPLORATION
YULEE MIDDLE SCHOOL & HIGH SCHOOL
YULEE, FLORIDA

BORING DESIGNATION: **B-15** SHEET: **2 of 2**
SECTION: TOWNSHIP: RANGE:

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./DAY)	ORG. CONT. (%)
40												
						Dense to very dense light gray fine SAND (SP)						
45		16-21-21	42									
50		18-25-30	55									
						Medium dense light gray Clayey fine SAND with few Shell fragments (SC)						
55		6-5-7	12									
						Medium dense gray fine SAND with Clay and few Shell fragments (SP-SC)						
60		8-8-8	16									
						Dense to medium dense dark gray fine SAND with Clay (SP-SC)						
65		10-13-18	31									
70		4-5-6	11									
						Hard tan LIMESTONE						
75		50/0"	50/0"									

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PROJECT NO.:	0930.2000219.0000
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PROJECT: GEOTECHNICAL EXPLORATION
YULEE MIDDLE SCHOOL & HIGH SCHOOL
YULEE, FLORIDA

BORING DESIGNATION: **B-16** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: R. DEAN SCOTT, ARCHITECT, INC.

LOCATION: SEE BORING LOCATION PLAN

REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 7.5
DATE OF READING: 11/05/20
EST. W.S.W.T. (ft):

DATE STARTED: 11/5/20
DATE FINISHED: 11/5/20
DRILLED BY: S.TORRES
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./DAY)	ORG. CONT. (%)
0												
		1-3-5	8			Loose brown fine SAND with Silt (SP-SM)						
		5-5-6	11			Medium dense light brown fine SAND (SP)						
		4-3-4	7			Loose to very loose brown to light brown fine SAND (SP)						
5		3-2-3	5									
		2-1-2	3	▼								
		1-1-2	3									
		2-2-4	6			Loose dark brown fine SAND with Silt (SP-SM)						
10												
		7-8-11	19			Medium dense to loose light brown to brown fine SAND (SP)						
15												
		4-5-3	8									
20												
		5-6-10	16									
25												
		7-9-15	24									
30												

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	0930.2000219.0000
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PROJECT: GEOTECHNICAL EXPLORATION
YULEE MIDDLE SCHOOL & HIGH SCHOOL
YULEE, FLORIDA

BORING DESIGNATION: **B-17** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: R. DEAN SCOTT, ARCHITECT, INC.

LOCATION: SEE BORING LOCATION PLAN

REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 2.6
DATE OF READING: 11/05/20
EST. W.S.W.T. (ft):

DATE STARTED: 11/3/20
DATE FINISHED: 11/3/20
DRILLED BY: S.TORRES
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./DAY)	ORG. CONT. (%)
0						Loose gray-brown fine SAND with Silt (SP-SM)						
		1-2-2	4									
		2-2-2	4	▼		Loose light brown to light gray fine SAND (SP)						
		3-4-3	7									
5		3-4-4	8									
		5-5-5	10									
		4-5-8	13			Medium dense to dense dark red-brown fine SAND with Silt (SP-SM)						
10		10-13-21	34									
						Medium dense light brown fine SAND (SP)						
15		4-5-7	12									
20		4-5-9	14									
						Medium dense gray fine SAND with Clay (SP-SC)						
25		5-11-12	23									
30		6-8-14	22									

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BORING LOG

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PROJECT: GEOTECHNICAL EXPLORATION
YULEE MIDDLE SCHOOL & HIGH SCHOOL
YULEE, FLORIDA

BORING DESIGNATION: **B-18** SHEET: **1 of 2**
SECTION: TOWNSHIP: RANGE:

CLIENT: R. DEAN SCOTT, ARCHITECT, INC.

LOCATION: SEE BORING LOCATION PLAN

REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 2.8
DATE OF READING: 11/05/20
EST. W.S.W.T. (ft):

DATE STARTED: 11/4/20
DATE FINISHED: 11/4/20
DRILLED BY: S.TORRES
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0												
		1-2-2	4			Loose gray to dark gray fine SAND with Silt (SP-SM)						
		2-2-2	4	▼		Loose light gray to light brown fine SAND (SP)						
		1-2-2	4									
5		2-2-2	4									
		2-2-4	6			Loose to medium dense dark brown fine SAND with Silt (SP-SM)						
		5-10-15	25									
10		8-9-13	22									
						Medium dense light brown fine SAND (SP)						
15		10-8-9	17									
						Loose to medium dense gray fine SAND with Clay (SP-SC)						
20		2-3-4	7									
25		3-3-11	14									
						Loose gray Clayey fine SAND (SC)						
30		3-2-2	4				19.7	42.8				
						Dense light gray fine SAND (SP)						
35		9-14-20	34									
40		14-17-21	38									

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UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	0930.2000219.0000
REPORT NO.:	1821965
PAGE:	A-20

PROJECT: GEOTECHNICAL EXPLORATION
YULEE MIDDLE SCHOOL & HIGH SCHOOL
YULEE, FLORIDA

BORING DESIGNATION: **B-18** SHEET: **2 of 2**
SECTION: TOWNSHIP: RANGE:

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./DAY)	ORG. CONT. (%)
40												
						Medium dense dark gray fine SAND with Clay (SP-SC)						
45	X	7-11-14	25									
						Loose dark gray Clayey fine SAND with trace Shell fragments (SC)						
50	X	4-2-3	5				16.2	25.0	37	213		
						Medium dense light gray fine SAND with Clay and few Shell fragments (SP-SC)						
55	X	5-6-9	15									
60	X	6-6-10	16									
						Dense dark gray fine SAND with Clay (SP-SC)						
65	X	13-17-24	41									
70	X	3-50/3"	50/3"			Very dense gray Clayey fine SAND with few Limestone fragments (SC) (MARL)						
						Hard tan LIMESTONE						
75	X	50/1/2"	50/1/2"									

BORING_LOG 0930.2000219.0000 YULEE MIDDLE SCHOOL & HIGH SCHOOL.GPJ UNIENGSC.GDT 12/1/20

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	0930.2000219.0000
REPORT NO.:	1821965
PAGE:	A-21

PROJECT: GEOTECHNICAL EXPLORATION
YULEE MIDDLE SCHOOL & HIGH SCHOOL
YULEE, FLORIDA

BORING DESIGNATION: **B-19** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: R. DEAN SCOTT, ARCHITECT, INC.

LOCATION: SEE BORING LOCATION PLAN

REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 2.1
DATE OF READING: 11/05/20
EST. W.S.W.T. (ft):

DATE STARTED: 11/3/20
DATE FINISHED: 11/3/20
DRILLED BY: S.TORRES
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./DAY)	ORG. CONT. (%)
0												
		1-3-4	7	▼		Loose dark gray fine SAND with Silt and trace Roots (SP-SM)						
		3-5-4	9			Loose to medium dense light gray to light brown fine SAND (SP)						
		3-3-5	8									
5		4-5-7	12									
		4-5-4	9									
		3-7-11	18			Medium dense to dense dark brown fine SAND with Silt (SP-SM)						
10		5-19-24	43									
						Medium dense light brown fine SAND (SP)						
15		3-5-9	14									
20		4-6-7	13									
						Medium dense gray-brown fine SAND with Clay (SP-SC)						
25		4-9-13	22									
						Medium dense light gray fine SAND (SP)						
30		5-10-18	28									

BORING_LOG 0930.2000219.0000 YULEE MIDDLE SCHOOL & HIGH SCHOOL.GPJ UNIENGSC.GDT 12/1/20

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KEY TO BORING LOGS

SYMBOLS AND ABBREVIATIONS

SYMBOL	DESCRIPTION
N-Value	No. of Blows of a 140-lb. Weight Falling 30 Inches Required to Drive a Standard Spoon 1 Foot
WOR	Weight of Drill Rods
WOH	Weight of Drill Rods and Hammer
	Sample from Auger Cuttings
	Standard Penetration Test Sample
	Thin-wall Shelby Tube Sample (Undisturbed Sampler Used)
% REC	Percent Core Recovery from Rock Core Drilling
RQD	Rock Quality Designation
	Stabilized Groundwater Level
	Seasonal High Groundwater Level (also referred to as the W.S.W.T.)
NE	Not Encountered
GNE	Groundwater Not Encountered
BT	Boring Terminated
-200 (%)	Fines Content or % Passing No. 200 Sieve
MC (%)	Moisture Content
LL	Liquid Limit (Atterberg Limits Test)
PI	Plasticity Index (Atterberg Limits Test)
K	Coefficient of Permeability
Org. Cont.	Organic Content
G.S. Elevation	Ground Surface Elevation

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS More than 50% retained on the No. 200 sieve*	GRAVELS 50% or more of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
		GRAVELS WITH FINES	GM	Silty gravels and gravel-sand-silt mixtures
			GC	Clayey gravels and gravel-sand-clay mixtures
	SANDS More than 50% of coarse fraction passes No. 4 sieve	CLEAN SANDS 5% or less passing No. 200 sieve	SW**	Well-graded sands and gravelly sands, little or no fines
			SP**	Poorly graded sands and gravelly sands, little or no fines
		SANDS with 12% or more passing No. 200 sieve	SM**	Silty sands, sand-silt mixtures
			SC**	Clayey sands, sand-clay mixtures
FINE-GRAINED SIOLS 50% or more passes the No. 200 sieve*	SILTS AND CLAYS Liquid limit 50% or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid limit greater than 50%		MH	Inorganic silts, micaceous or diamicaceous fine sands or silts, elastic silts
			CH	Inorganic clays or clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity
			PT	Peat, muck and other highly organic soils

*Based on the material passing the 3-inch (75 mm) sieve
** Use dual symbol (such as SP-SM and SP-SC) for soils with more than 5% but less than 12% passing the No. 200 sieve

RELATIVE DENSITY
(Sands and Gravels)
Very loose – Less than 4 Blow/Foot
Loose – 4 to 10 Blows/Foot
Medium Dense – 11 to 30 Blows/Foot
Dense – 31 to 50 Blows/Foot
Very Dense – More than 50 Blows/Foot

CONSISTENCY
(Silts and Clays)
Very Soft – Less than 2 Blows/Foot
Soft – 2 to 4 Blows/Foot
Firm – 5 to 8 Blows/Foot
Stiff – 9 to 15 Blows/Foot
Very Stiff – 16 to 30 Blows/Foot
Hard – More than 30 Blows/Foot

RELATIVE HARDNESS
(Limestone)
Soft – 100 Blows for more than 2 Inches
Hard – 100 Blows for less than 2 Inches

MODIFIERS

These modifiers Provide Our Estimate of the Amount of Minor Constituents (Silt or Clay Size Particles) in the Soil Sample
Trace – 5% or less
With Silt or With Clay – 6% to 11%
Silty or Clayey – 12% to 30%
Very Silty or Very Clayey – 31% to 50%

These Modifiers Provide Our Estimate of the Amount of Organic Components in the Soil Sample
Trace – Less than 3%
Few – 3% to 4%
Some – 5% to 8%
Many – Greater than 8%

These Modifiers Provide Our Estimate of the Amount of Other Components (Shell, Gravel, Etc.) in the Soil Sample
Trace – 5% or less
Few – 6% to 12%
Some – 13% to 30%
Many – 31% to 50%

FIELD EXPLORATION PROCEDURES

Standard Penetration Test Boring

The penetration boring was made in general accordance with the latest revision of ASTM D 1586, "Penetration Test and Split-Barrel Sampling of Soils". The boring was advanced by rotary drilling techniques using a circulating bentonite fluid for borehole flushing and stability. At 2 ½ to 5 foot intervals, the drilling tools were removed from the borehole and a split-barrel sampler inserted to the borehole bottom and driven 18 inches into the soil using a 140-pound hammer falling on the average 30 inches per hammer blow. The number of blows for the final 12 inches of penetration is termed the "penetration resistance, blow count, or N-value". This value is an index to several in-place geotechnical properties of the material tested, such as relative density and Young's Modulus.

After driving the sampler 18 inches (or less if in hard rock-like material), the sampler was retrieved from the borehole and representative samples of the material within the split-barrel were placed in glass jars and sealed. After completing the drilling operations, the samples for each boring were transported to our laboratory where they were examined by our engineer in order to verify the driller's field classification.

Undisturbed Tube Samples

Relatively undisturbed samples were obtained by forcing a section of 3 inch O.D., 16 gauge, steel tubing (Shelby tube) into the soil at the desired sampling level. The sampling procedure is described by ASTM Specification D-1587. The tube, together with the encased soil, was carefully removed from the ground, made air-tight, and transported to our laboratory.

Double Ring Infiltrometer Tests

The field infiltration tests were performed using a slightly modified version of ASTM D-3385, "Infiltration Rate of Soils in Field Using Double-Ring Infiltrometers". In the tests, two open cylinders (12-inch and 24-inch I.D.) Were driven into the ground, one inside the other. The larger cylinder was driven to a depth of 6 inches, the smaller cylinder to a depth of about 2 inches. Both cylinders were then filled with water for a 5-minute period to saturate the underlying soils. A 4-inch head of water (above the ground surface) was maintained in both the inner and outer rings. The volume of water added to the inner rings was measured and recorded every 5 minutes for a total period of 60 to 120 minutes. Infiltrometer rates were then calculated based on the water volumes measured for each time increment.

LABORATORY TESTING PROCEDURES

Natural Moisture Content

The water content of the sample tested was determined in general accordance with the latest revision of ASTM D 2216. The water content is defined as the ratio of "pore" or "free" water in a given mass of material to the mass of solid material particles.

Percent Fines Content

The percent fines or material passing the No. 200 mesh sieve of the sample tested was determined in general accordance with the latest revision of ASTM D 1140. The percent fines are the soil particles in the silt and clay size range.

Falling Head Permeability

An undisturbed Shelby tube sample of the soil encountered in the area of the propose retention pond was collected for permeability testing. The Shelby tube and sample were sealed in a permeameter and saturated. The sample diameter was about 2.8 inches with a height of approximately 5 inches. The hydraulic head ranged from 33 to 13 inches during testing. Several tests were performed to verify the initial results. The testing procedures used were in substantial accordance with methodology for laboratory permeability testing described in ASTM D-2434.

Atterberg Limits

The Atterberg Limits consist of the Liquid Limit (LL) and the Plastic Limit (PL). The LL and PL were determined in general accordance with the latest revision of ASTM D 4318. The LL is the water content of the material denoting the boundary between the liquid and plastic states. The PL is the water content denoting the boundary between the plastic and semi-solid states. The Plasticity Index (PI) is the range of water content over which a soil behaves plastically and is denoted numerically by as the difference between the LL and the PL. The water content of the sample tested was determined in general accordance with the latest revision of ASTM D 2216. The water content is defined as the ratio of "pore" or "free" water in a given mass of material to the mass of solid material particles.

APPENDIX B

IMPORTANT INFORMATION ABOUT THIS GEOTECHNICAL ENGINEERING REPORT

CONSTRAINTS AND RESTRICTIONS

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

Telephone: 301/565-2733
e-mail: info@geoprofessional.org www.geoprofessional.org

CONSTRAINTS & RESTRICTIONS

The intent of this document is to bring to your attention the potential concerns and the basic limitations of a typical geotechnical report.

WARRANTY

Universal Engineering Sciences has prepared this report for our client for his exclusive use, in accordance with generally accepted soil and foundation engineering practices, and makes no other warranty either expressed or implied as to the professional advice provided in the report.

UNANTICIPATED SOIL CONDITIONS

The analysis and recommendations submitted in this report are based upon the data obtained from soil borings performed at the locations indicated on the Boring Location Plan. This report does not reflect any variations which may occur between these borings.

The nature and extent of variations between borings may not become known until excavation begins. If variations appear, we may have to re-evaluate our recommendations after performing on-site observations and noting the characteristics of any variations.

CHANGED CONDITIONS

We recommend that the specifications for the project require that the contractor immediately notify Universal Engineering Sciences, as well as the owner, when subsurface conditions are encountered that are different from those present in this report.

No claim by the contractor for any conditions differing from those anticipated in the plans, specifications, and those found in this report, should be allowed unless the contractor notifies the owner and Universal Engineering Sciences of such changed conditions. Further, we recommend that all foundation work and site improvements be observed by a representative of Universal Engineering Sciences to monitor field conditions and changes, to verify design assumptions and to evaluate and recommend any appropriate modifications to this report.

MISINTERPRETATION OF SOIL ENGINEERING REPORT

Universal Engineering Sciences is responsible for the conclusions and opinions contained within this report based upon the data relating only to the specific project and location discussed herein. If the conclusions or recommendations based upon the data presented are made by others, those conclusions or recommendations are not the responsibility of Universal Engineering Sciences.

CHANGED STRUCTURE OR LOCATION

This report was prepared in order to aid in the evaluation of this project and to assist the architect or engineer in the design of this project. If any changes in the design or location of the structure as outlined in this report are planned, or if any structures are included or added that are not discussed in the report, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions modified or approved by Universal Engineering Sciences.

USE OF REPORT BY BIDDERS

Bidders who are examining the report prior to submission of a bid are cautioned that this report was prepared as an aid to the designers of the project and it may affect actual construction operations.

Bidders are urged to make their own soil borings, test pits, test caissons or other investigations to determine those conditions that may affect construction operations. Universal Engineering Sciences cannot be responsible for any interpretations made from this report or the attached boring logs with regard to their adequacy in reflecting subsurface conditions which will affect construction operations.

STRATA CHANGES

Strata changes are indicated by a definite line on the boring logs which accompany this report. However, the actual change in the ground may be more gradual. Where changes occur between soil samples, the location of the change must necessarily be estimated using all available information and may not be shown at the exact depth.

OBSERVATIONS DURING DRILLING

Attempts are made to detect and/or identify occurrences during drilling and sampling, such as: water level, boulders, zones of lost circulation, relative ease or resistance to drilling progress, unusual sample recovery, variation of driving resistance, obstructions, etc.; however, lack of mention does not preclude their presence.

WATER LEVELS

Water level readings have been made in the drill holes during drilling and they indicate normally occurring conditions. Water levels may not have been stabilized at the last reading. This data has been reviewed and interpretations made in this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, tides, and other factors not evident at the time measurements were made and reported. Since the probability of such variations is anticipated, design drawings and specifications should accommodate such possibilities and construction planning should be based upon such assumptions of variations.

LOCATION OF BURIED OBJECTS

All users of this report are cautioned that there was no requirement for Universal Engineering Sciences to attempt to locate any man-made buried objects during the course of this exploration and that no attempt was made by Universal Engineering Sciences to locate any such buried objects. Universal Engineering Sciences cannot be responsible for any buried man-made objects which are subsequently encountered during construction that are not discussed within the text of this report.

TIME

This report reflects the soil conditions at the time of exploration. If the report is not used in a reasonable amount of time, significant changes to the site may occur and additional reviews may be required.

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REPORT OF A GEOTECHNICAL EXPLORATION

Yulee Middle School Retention Pond
Yulee, Florida

March 23, 2021

PROJECT NO. 0930.2100047.0000
REPORT NO. 1850523

Prepared for:

R. DEAN SCOTT, ARCHITECT, INC.
126 W. Adams Street – Suite 602
Jacksonville, Florida 32202

Prepared by:

UNIVERSAL ENGINEERING SCIENCES
5561 Florida Mining Boulevard South
Jacksonville, Florida 32257-3648
(904) 296-0757

March 23, 2021

R. Dean Scott, Architect, Inc.
126 W. Adam Street – Suite 602
Jacksonville, Florida 32202

Attention: Mr. Dean Scott

Reference: **REPORT OF A GEOTECHNICAL EXPLORATION**
Yulee Middle School Retention Pond
Yulee, Florida
UES Project No. 0930.2100047.0000 and Report No. 1850523

Dear Mr. Scott

Universal Engineering Sciences, LLC has completed a subsurface exploration at the site of the proposed project located in Jacksonville, Florida. These services were provided in general accordance with our Proposal No. 1840025, dated February 16, 2021. This report contains the results of our exploration, an engineering evaluation with respect to the project characteristics described to us, and recommendations for groundwater considerations, fillable porosity, and suitability of soils encountered for use as structural fill. A summary of our findings is as follows:

- The boring generally encountered loose to very loose fine sand with silt (SP-M) in the upper 4.0 feet, underlain by very loose fine sand with trace to few roots/organics (SP) to a depth of 12.3 feet. Loose fine sand with silt (SP-SM) was then encountered to a depth of 17.3 feet. Loose fine sand (SP) then extended to the 20-foot boring termination depth.

- We measured the groundwater level at the boring location at a depth of 4.3 feet below the existing grade. We estimate the seasonal high groundwater level will occur approximately 3.5 feet below existing grade at the time of our exploration.

- LA -1 indicated horizontal and vertical hydraulic conductivity rates of (K_{hs}) 2.8 ft/day and (K_{vs}) 5.5 ft/day at a depth of 4.0 foot below existing grade. The results are shown on the attached Boring Log. Based on common practice, this value can be considered the saturated vertical and horizontal infiltration rate in some groundwater models. The results are shown on the attached Boring Log and presented on Table 3 in Section 4.3.3.

- Based on the boring performed in the proposed storm water retention area, the soils described as fine sand (SP) and fine sand with silt (SP-SM) as encountered thought the 20-foot termination deph are suitable for use as structural fill. It should be understood that soils excavated from below the water table may be excessively wet and may require stockpiling or spreading to dry prior to placement and compaction. Soils described as fine sand with silt (SP-SM) and fine sand with clay (SP-SC) may take longer to dry than soils described as fine sand (SP).

We trust this report meets yours needs and addresses the geotechnical issues associated with the proposed construction. We appreciate the opportunity to have worked with you on this project and look forward to a continued association. Please do not hesitate to contact us if you should have any questions, or if we may further assist you as your plans proceed.

Respectfully submitted,

UNIVERSAL ENGINEERING SCIENCES, LLC
Certificate of Authorization No. 549

Stephen R. Weaver, P.E.
Geotechnical Services Manager
FL P.E. Number 37389
Date: 3/23/21
SRW/pm

STEPHEN R. WEAVER
LICENSE
No. 37389
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Payton W. Mann, P.E.
Project Engineer
FL P.E. Number 90474
Date: 3/23/21

1.0 INTRODUCTION

In this report, we present the results of the subsurface exploration for the proposed project located in Yulee, Florida. We have divided this report into the following sections:

- SCOPE OF SERVICES - Defines what we did
- FINDINGS - Describes what we encountered
- RECOMMENDATIONS - Describes what we encourage you to do
- LIMITATIONS - Describes the restrictions inherent in this report
- APPENDICES - Presents support materials referenced in this report

2.0 SCOPE OF SERVICES

2.1 PROJECT DESCRIPTION

Project information was provided to us in recent correspondence with you. We were provided with a copy of an Additional Boring Location Plan, dated February 12, 2021. This plan included existing structures, requested boring locations, and topography.

We understand that the proposed construction will consist of expansion of the northern most pond at the Yulee Middle School in Yulee, Florida. It is anticipated the suitable structural fill encountered in the excavation will be utilized on nearby by sites.

We note that since the applicability of geotechnical recommendations is very dependent upon project characteristics, most specifically: improvement locations, grade alterations, and actual structural loads applied, UES must review the preliminary and final site and grading plans, and structural design loads to validate all recommendations rendered herein. Without such review our recommendations should not be relied upon for final design or construction of any site improvements.

2.2 PURPOSE

The purposes of this geotechnical exploration were:

- to explore the general subsurface conditions at the site for the proposed construction;

- to interpret and evaluate the subsurface conditions with respect to the proposed construction; and

- to provide geotechnical engineering recommendations for groundwater considerations, and retention pond considerations.

This report presents an evaluation of site conditions on the basis of traditional geotechnical procedures for site characterization. The recovered samples were not examined, either visually or analytically, for chemical composition or environmental hazards. Universal Engineering Sciences would be pleased to perform these services, if you desire.

Our exploration was confined to the zone of soil likely to be stressed by the proposed construction. Our work did not address the potential for surface expression of deep geological conditions. This evaluation requires a more extensive range of field services than performed in this study. We will be pleased to conduct an investigation to evaluate the probable effect of the regional geology upon the proposed construction, if you desire.

2.3 FIELD EXPLORATION

A field exploration was performed on March 5, 2021. The approximate boring location is shown on the attached Boring Location Plan in Appendix A. The approximate boring location was determined in the field by our personnel using a hand-held GPS unit and should be considered accurate only to the degree implied by the method of measurement used. Samples of the soils encountered will be held in our laboratory for your inspection for 60 days unless we are notified otherwise.

2.3.1 SPT Boring

To explore the subsurface conditions within the proposed retention expansion area, we located and drilled one (1) Standard Penetration Test (SPT) boring to a depth of 20 feet below the existing ground surface in general accordance with the methodology outlined in ASTM D 1586. A summary of this field procedure is included in Appendix A. Split-spoon soil samples recovered during performance of the boring were visually classified in the field and representative portions of the samples were transported to our laboratory for further evaluation.

2.3.3 Undisturbed Tube Sample

Two (2) relatively undisturbed soil samples were obtained at depths of 4 feet in the proposed retention area using the Shelby Tube method (one in a horizontal direction and one in a vertical direction). This method is described in the Field Exploration Procedures in Appendix A. The samples were returned to our laboratory for examination and subsequent testing.

2.4 LABORATORY TESTING

Representative soil samples obtained during our field exploration were returned to our office and classified by a geotechnical engineer. The samples were visually classified in general accordance with ASTM D 2488 (Unified Soil Classification System).

Five (5) fines content tests, five (5) moisture content tests, two (2) falling head permeability tests, and two (2) organic content tests were conducted in the laboratory on representative soil samples obtained from the boring. These tests were performed to aid in classifying the soils and to help quantify and correlate engineering properties. The results of these tests are presented on the Boring Log in Appendix A. A brief description of the laboratory procedures used is also provided in Appendix A.

3.0 FINDINGS

3.1 SOIL SURVEY

Based on the Soil Survey for Nassau County, Florida, as prepared by the US Department of Agriculture Soil Conservation Service, the predominant predevelopment soil types at the site are identified as Hurricane-Pottsburg (6) and Centenary (26).

A summary of characteristics of these soil series were obtained from the Soil Survey and is included in Table 1.

TABLE 1
Summary of Soil Survey Information

Soil Type	Constituents	Hydrologic Group	Natural Drainage	Soil Permeability (Inches/Hr)	Seasonal High Water Table
Hurricane (6)	0-68" Fine sand 68-80" Sand, fine sand, loamy sand	A	Somewhat Poorly Drained	0-68" > 6.0 68-80" 2.0-6.0	2.5 – 3.5
Pottsburg (6)	0-8" Fine sand 8-55" Sand, fine sand 55-80" Sand, fine sand, loamy sand	A/D	Poorly Drained	0-55" 6.0-20 55-80" 0.6-20	1.0 – 2.0
Centenary (26)	0-7" Fine sand 7-80" Sand, fine sand, loamy sand	A	Moderately Well Drained	0-66" 6.0 – 20 66-80" 2.0 – 6.0	3.5 – 5.0

3.2 SURFACE CONDITIONS

The site of the proposed project is located at the existing Yulee Middle School in Yulee, Florida. The site is bordered to the north and south by residential homes and wooded to the west and east. The site visually appears to be sloping down from the southeast to southwest and south of the baseball fields a small bowl depression area was observed. There are existing wet retention ponds located on the southeast side of the schools and one on the northeast side.

3.3 SUBSURFACE CONDITIONS

The boring location and detailed subsurface conditions are illustrated in Appendix A: Boring Location Plan and Boring Log. It should be noted that soil conditions will vary away from the boring location. The classifications and descriptions shown on the log are generally based upon visual characterizations of the recovered soil samples and a limited number of laboratory tests. Also, see Appendix A: Key to Boring Log, for further explanation of the symbols and placement of data on the Boring Log. The following table summarizes the soil conditions encountered.

TABLE 2
General Soil Profile

Typical depth (ft)		Soil Descriptions
From	To	
0.0	4.0	Loose to very loose fine sand with silt (SP-M)
4.0	12.3	Very loose fine sand with trace to few roots/organics (SP)
12.3	17.3	Loose fine sand with silt (SP-SM)
17.3	20*	Loose fine sand (SP)

* Termination Depth of Deepest Boring
( ) Indicates Unified Soil Classification

We measured the groundwater level at the boring location at a depth of 4.3 feet below the existing grade. It should be anticipated the groundwater level will fluctuate due to topography, seasonal climatic variations, surface water runoff patterns, construction operations, and other interrelated factors.

4.0 RECOMMENDATIONS

4.1 GENERAL

Our geotechnical engineering evaluation of the site and subsurface conditions at the property with respect to the anticipated construction are based upon (1) our site observations, (2) the limited field data obtained, and (3) our understanding of the project information and anticipated construction as presented in this report.

4.2 GROUNDWATER CONSIDERATIONS

The groundwater table will fluctuate seasonally depending upon local rainfall. The rainy season in Northeast Florida is normally between June and September. Based upon our review of U.S.G.S. data, Nassau County Soil Survey, and regional hydrogeology, it is our opinion the seasonal high water level will occur approximately 3.5 feet below existing ground level at the time of our exploration.

Note: it is possible the estimated seasonal high groundwater levels will temporarily exceed these estimated levels during any given year in the future. Should impediments to surface water drainage exist on the site, or should rainfall intensity and duration, or total rainfall quantities exceed the normally anticipated rainfall quantities, groundwater levels may exceed our seasonal high estimates. We recommend positive drainage be established and maintained on the site during construction. We further recommend permanent measures be constructed to maintain positive drainage from the site throughout the life of the project.

4.3 RETENTION POND CONSIDERATION

4.3.1 Fill Suitability

Based on the boring performed in the proposed storm water retention area, the soils described as fine sand (SP) and fine sand with silt (SP-SM) as encountered thought the 20-foot termination depth are suitable for use as structural fill. It should be understood that soils excavated from below the water table may be excessively wet and may require stockpiling or spreading to dry prior to placement and compaction. Soils described as fine sand with silt (SP-SM) and fine sand with clay (SP-SC) may take longer to dry than soils described as fine sand (SP).

4.3.2 Hydraulic Conductivity

LA -1 indicated horizontal and vertical hydraulic conductivity rates of (K_{hs}) 2.8 ft/day and (K_{vs}) 5.5 ft/day at a depth of 4.0 foot below existing grade. The results are shown on the attached Boring Log. Based on common practice, this value can be considered the saturated vertical and horizontal infiltration rate in some groundwater models.

The coefficient of permeability from the laboratory tests are intended to provide an indication of the soils drainage characteristics. The actual exfiltration rates may be different due to pond geometry, soil stratification, retention volume and groundwater mounding effects.

4.3.3 Aquifer Parameters

Based upon our visual-manual review of the site soils, the results of our laboratory testing and observation of the existing site conditions, we recommend that you consider the surficial soils to have a fillable porosity of 25 percent. Presented below in the table is a summary of our stormwater retention design parameters. Please note we have <u>not</u> applied a Factory of Safety to the values presented in Table 3 below.

TABLE 3
Stormwater Management System Soil Design Parameters (1)

Corresponding Soil Boring Test Location	LA-1
Depth of Soil Tested (ft)	4.0
Saturated Horizontal Hydraulic Conductivity (K_{hs} (ft/day)	2.8
Estimated Unsaturated Vertical Hydraulic Conductivity, K_{vu} (ft/day)	8.3 (3)
Saturated Vertical Hydraulic Conductivity, K_{vs} (ft/day)	5.5
Estimated Fillable Porosity of Soil (%)	25
Depth of Measured Groundwater Table (ft)	4.3
Estimated Seasonal High Groundwater Table (ft)	3.5
Base of aquifer (ft)	20 (2)

Notes:

1) A factor of safety (F.O.S) has not been applied to the values presented in the Table above.
2) Base of aquifer taken as termination depth of the 20-foot boring
3) Estimated value based on measured saturated rates

4.3.2 Seasonal High Groundwater

The groundwater was encountered at a depth of 4.3 feet at the edge of the existing retention pond boring. We estimate the seasonal high groundwater table will occur 3.5 feet below the existing grade.

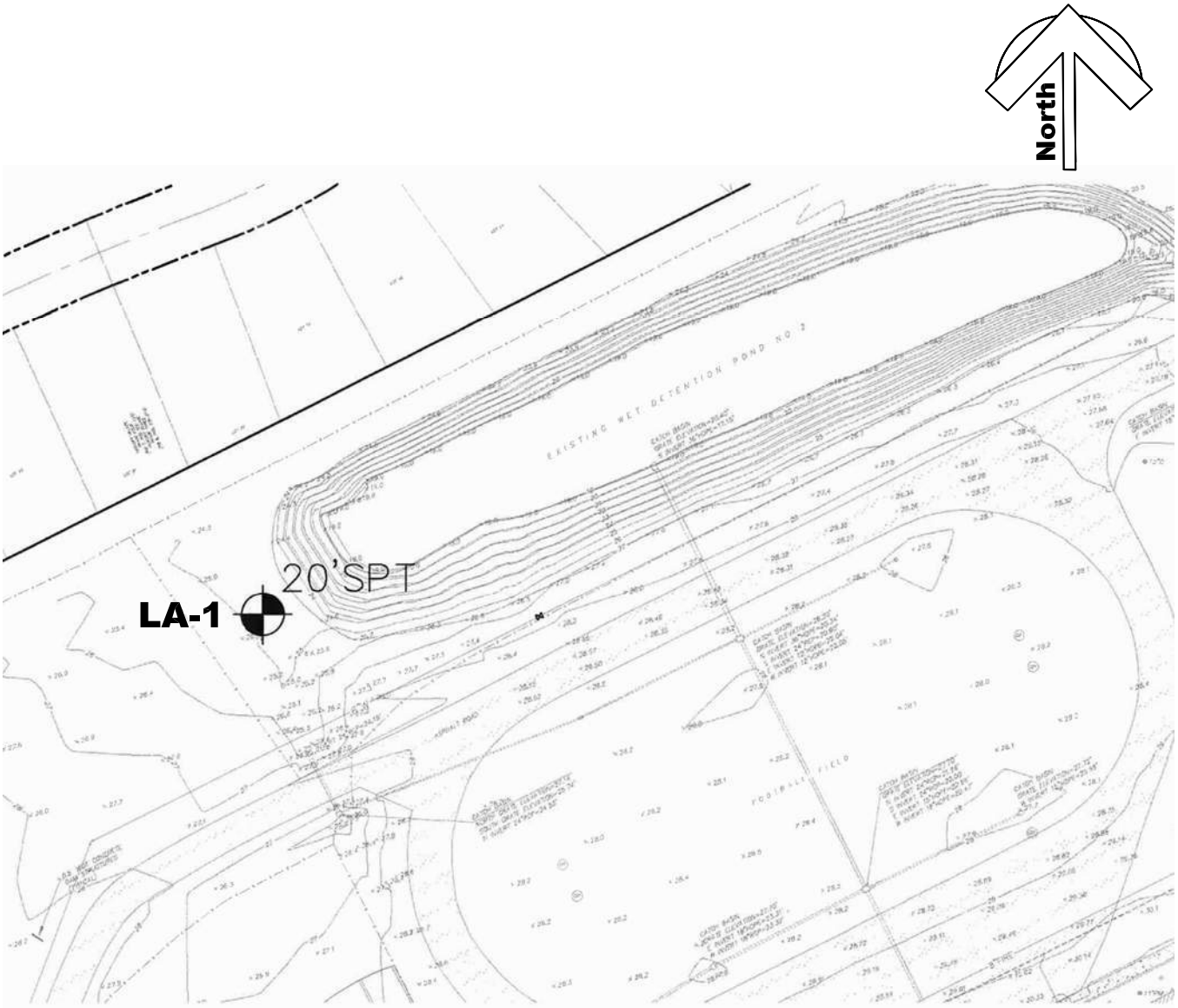
5.0 LIMITATIONS

During the early stages of most construction projects, geotechnical issues not addressed in this report may arise. Because of the natural limitations inherent in working with the subsurface, it is not possible for a geotechnical engineer to predict and address all possible problems. Geotechnical Business Council (GBC) publication, "Important Information About This Geotechnical Engineering Report" appears in Appendix B, and will help explain the nature of geotechnical issues.

Further, we present documents in Appendix B: Constraints and Restrictions, to bring to your attention the potential concerns and the basic limitations of a typical geotechnical report and the General Conditions under which our services were provided.

APPENDIX A

BORING LOCATION PLAN
BORING LOG
KEY TO BORING LOG
FIELD EXPLORATION PROCEDURES
LABORATORY TESTING PROCEDURES



LEGEND

SPT BORING LOCATION

UNIVERSAL
ENGINEERING SCIENCES

GEOTECHNICAL EXPLORATION
YULEE MIDDLE SCHOOL RETENTION POND
YULEE, FLORIDA

BORING LOCATION PLAN

REVISED BY: TW	DATE: 3/16/21	CHECKED BY: P.M.	DATE: 3/16/21
SCALE: N.T.S.	PROJECT NO: 0930.2100047.0000	REPORT NO: 1850523	PAGE NO: A-1

UNIVERSAL ENGINEERING SCIENCES
BORING LOG

PROJECT NO.:	0930.2100047.0000
REPORT NO.:	1850523
PAGE:	A-1

PROJECT: GEOTECHNICAL EXPLORATION
YULEE MIDDLE SCHOOL RETENTION POND
YULEE, FLORIDA

BORING DESIGNATION: **LA-1** SHEET: **1 of 1**
SECTION: TOWNSHIP: RANGE:

CLIENT: R. DEAN SCOTT, ARCHITECT, INC.

LOCATION: SEE BORNG LOCATION PLAN

REMARKS:

G.S. ELEVATION (ft):
WATER TABLE (ft): 4.3
DATE OF READING: 3/5/21
EST. W.S.W.T. (ft):

DATE STARTED: 3/5/21
DATE FINISHED: 3/5/21
DRILLED BY: S. TORRES
TYPE OF SAMPLING: ASTM D 1586

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS LL	ATTERBERG LIMITS PI	K (FT./ DAY)	ORG. CONT. (%)
0												
		1-3-3	6			Loose to very loose brown fine SAND with Silt (SP-SM)						
		2-2-3	5				5.9	20.8			Khs=2.8	
		1-1-1	2	▼		Very loose dark brown fine SAND with trace Roots (SP)	4.2	20.8			Kvs=5.5	
5		WOH-1-1	2									
							5.0	27.9				2.7
		1-1-1	2									
		1-2-1	3			Very loose dark brown fine SAND with few Roots (SP)						
10							4.0	35.2				3.1
		1-1-1	2									
						Loose brown to light brown fine SAND with Silt (SP-SM)						
15		1-3-5	8									
						Loose brown fine SAND (SP)						
							4.8	27.5				
20		2-2-2	4									

BORING_LOG 0930.2100047.0000-YULEE MIDDLE SCHOOL RETENTION POND.GPJ UNIENGSC.GDT 3/22/21

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KEY TO BORING LOGS

SYMBOLS AND ABBREVIATIONS

SYMBOL	DESCRIPTION
N-Value	No. of Blows of a 140-lb. Weight Falling 30 Inches Required to Drive a Standard Spoon 1 Foot
WOR	Weight of Drill Rods
WOH	Weight of Drill Rods and Hammer
	Sample from Auger Cuttings
	Standard Penetration Test Sample
	Thin-wall Shelby Tube Sample (Undisturbed Sampler Used)
% REC	Percent Core Recovery from Rock Core Drilling
RQD	Rock Quality Designation
	Stabilized Groundwater Level
	Seasonal High Groundwater Level (also referred to as the W.S.W.T.)
NE	Not Encountered
GNE	Groundwater Not Encountered
BT	Boring Terminated
-200 (%)	Fines Content or % Passing No. 200 Sieve
MC (%)	Moisture Content
LL	Liquid Limit (Atterberg Limits Test)
PI	Plasticity Index (Atterberg Limits Test)
K	Coefficient of Permeability
Org. Cont.	Organic Content
G.S. Elevation	Ground Surface Elevation

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS More than 50% retained on the No. 200 sieve*	GRAVELS 50% or more of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
		GRAVELS WITH FINES	GM	Silty gravels and gravel-sand-silt mixtures
			GC	Clayey gravels and gravel-sand-clay mixtures
	SANDS More than 50% of coarse fraction passes No. 4 sieve	CLEAN SANDS 5% or less passing No. 200 sieve	SW**	Well-graded sands and gravelly sands, little or no fines
			SP**	Poorly graded sands and gravelly sands, little or no fines
		SANDS with 12% or more passing No. 200 sieve	SM**	Silty sands, sand-silt mixtures
			SC**	Clayey sands, sand-clay mixtures
FINE-GRAINED SIOLS 50% or more passes the No. 200 sieve*	SILTS AND CLAYS Liquid limit 50% or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid limit greater than 50%		MH	Inorganic silts, micaceous or diamicaceous fine sands or silts, elastic silts
			CH	Inorganic clays or clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity
			PT	Peat, muck and other highly organic soils

*Based on the material passing the 3-inch (75 mm) sieve
** Use dual symbol (such as SP-SM and SP-SC) for soils with more than 5% but less than 12% passing the No. 200 sieve

RELATIVE DENSITY
(Sands and Gravels)
Very loose – Less than 4 Blow/Foot
Loose – 4 to 10 Blows/Foot
Medium Dense – 11 to 30 Blows/Foot
Dense – 31 to 50 Blows/Foot
Very Dense – More than 50 Blows/Foot

CONSISTENCY
(Silts and Clays)
Very Soft – Less than 2 Blows/Foot
Soft – 2 to 4 Blows/Foot
Firm – 5 to 8 Blows/Foot
Stiff – 9 to 15 Blows/Foot
Very Stiff – 16 to 30 Blows/Foot
Hard – More than 30 Blows/Foot

RELATIVE HARDNESS
(Limestone)
Soft – 100 Blows for more than 2 Inches
Hard – 100 Blows for less than 2 Inches

MODIFIERS

These modifiers Provide Our Estimate of the Amount of Minor Constituents (Silt or Clay Size Particles) in the Soil Sample
Trace – 5% or less
With Silt or With Clay – 6% to 11%
Silty or Clayey – 12% to 30%
Very Silty or Very Clayey – 31% to 50%

These Modifiers Provide Our Estimate of the Amount of Organic Components in the Soil Sample
Trace – Less than 3%
Few – 3% to 4%
Some – 5% to 8%
Many – Greater than 8%

These Modifiers Provide Our Estimate of the Amount of Other Components (Shell, Gravel, Etc.) in the Soil Sample
Trace – 5% or less
Few – 6% to 12%
Some – 13% to 30%
Many – 31% to 50%

FIELD EXPLORATION PROCEDURES

Standard Penetration Test Boring

The penetration boring was made in general accordance with the latest revision of ASTM D 1586, "Penetration Test and Split-Barrel Sampling of Soils". The boring was advanced by rotary drilling techniques using a circulating bentonite fluid for borehole flushing and stability. At 2 ½ to 5 foot intervals, the drilling tools were removed from the borehole and a split-barrel sampler inserted to the borehole bottom and driven 18 inches into the soil using a 140-pound hammer falling on the average 30 inches per hammer blow. The number of blows for the final 12 inches of penetration is termed the "penetration resistance, blow count, or N-value". This value is an index to several in-place geotechnical properties of the material tested, such as relative density and Young's Modulus.

After driving the sampler 18 inches (or less if in hard rock-like material), the sampler was retrieved from the borehole and representative samples of the material within the split-barrel were placed in glass jars and sealed. After completing the drilling operations, the samples for each boring were transported to our laboratory where they were examined by our engineer in order to verify the driller's field classification.

Undisturbed Tube Samples

Relatively undisturbed samples were obtained by forcing a section of 3 inch O.D., 16 gauge, steel tubing (Shelby tube) into the soil at the desired sampling level. The sampling procedure is described by ASTM Specification D-1587. The tube, together with the encased soil, was carefully removed from the ground, made air-tight, and transported to our laboratory.

LABORATORY TESTING PROCEDURES

Natural Moisture Content

The water content of the sample tested was determined in general accordance with the latest revision of ASTM D 2216. The water content is defined as the ratio of "pore" or "free" water in a given mass of material to the mass of solid material particles.

Percent Fines Content

The percent fines or material passing the No. 200 mesh sieve of the sample tested was determined in general accordance with the latest revision of ASTM D 1140. The percent fines are the soil particles in the silt and clay size range.

Organic Loss on Ignition (Percent Organics)

The organic loss on ignition or percent organic material in the sample tested was determined in general accordance with ASTM D 2974. The percent organics is the material, expressed as a percentage, which is burned off in a muffle furnace at 550° Celsius.

Falling Head Permeability

An undisturbed Shelby tube sample of the soil encountered in the area of the propose retention pond was collected for permeability testing. The Shelby tube and sample were sealed in a permeameter and saturated. The sample diameter was about 2.8 inches with a height of approximately 5 inches. The hydraulic head ranged from 33 to 13 inches during testing. Several tests were performed to verify the initial results. The testing procedures used were in substantial accordance with methodology for laboratory permeability testing described in ASTM D-2434.

APPENDIX B

IMPORTANT INFORMATION ABOUT THIS GEOTECHNICAL ENGINEERING REPORT

CONSTRAINTS AND RESTRICTIONS

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

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CONSTRAINTS & RESTRICTIONS

The intent of this document is to bring to your attention the potential concerns and the basic limitations of a typical geotechnical report.

WARRANTY

Universal Engineering Sciences has prepared this report for our client for his exclusive use, in accordance with generally accepted soil and foundation engineering practices, and makes no other warranty either expressed or implied as to the professional advice provided in the report.

UNANTICIPATED SOIL CONDITIONS

The analysis and recommendations submitted in this report are based upon the data obtained from soil borings performed at the locations indicated on the Boring Location Plan. This report does not reflect any variations which may occur between these borings.

The nature and extent of variations between borings may not become known until excavation begins. If variations appear, we may have to re-evaluate our recommendations after performing on-site observations and noting the characteristics of any variations.

CHANGED CONDITIONS

We recommend that the specifications for the project require that the contractor immediately notify Universal Engineering Sciences, as well as the owner, when subsurface conditions are encountered that are different from those present in this report.

No claim by the contractor for any conditions differing from those anticipated in the plans, specifications, and those found in this report, should be allowed unless the contractor notifies the owner and Universal Engineering Sciences of such changed conditions. Further, we recommend that all foundation work and site improvements be observed by a representative of Universal Engineering Sciences to monitor field conditions and changes, to verify design assumptions and to evaluate and recommend any appropriate modifications to this report.

MISINTERPRETATION OF SOIL ENGINEERING REPORT

Universal Engineering Sciences is responsible for the conclusions and opinions contained within this report based upon the data relating only to the specific project and location discussed herein. If the conclusions or recommendations based upon the data presented are made by others, those conclusions or recommendations are not the responsibility of Universal Engineering Sciences.

CHANGED STRUCTURE OR LOCATION

This report was prepared in order to aid in the evaluation of this project and to assist the architect or engineer in the design of this project. If any changes in the design or location of the structure as outlined in this report are planned, or if any structures are included or added that are not discussed in the report, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions modified or approved by Universal Engineering Sciences.

USE OF REPORT BY BIDDERS

Bidders who are examining the report prior to submission of a bid are cautioned that this report was prepared as an aid to the designers of the project and it may affect actual construction operations.

Bidders are urged to make their own soil borings, test pits, test caissons or other investigations to determine those conditions that may affect construction operations. Universal Engineering Sciences cannot be responsible for any interpretations made from this report or the attached boring logs with regard to their adequacy in reflecting subsurface conditions which will affect construction operations.

STRATA CHANGES

Strata changes are indicated by a definite line on the boring logs which accompany this report. However, the actual change in the ground may be more gradual. Where changes occur between soil samples, the location of the change must necessarily be estimated using all available information and may not be shown at the exact depth.

OBSERVATIONS DURING DRILLING

Attempts are made to detect and/or identify occurrences during drilling and sampling, such as: water level, boulders, zones of lost circulation, relative ease or resistance to drilling progress, unusual sample recovery, variation of driving resistance, obstructions, etc.; however, lack of mention does not preclude their presence.

WATER LEVELS

Water level readings have been made in the drill holes during drilling and they indicate normally occurring conditions. Water levels may not have been stabilized at the last reading. This data has been reviewed and interpretations made in this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, tides, and other factors not evident at the time measurements were made and reported. Since the probability of such variations is anticipated, design drawings and specifications should accommodate such possibilities and construction planning should be based upon such assumptions of variations.

LOCATION OF BURIED OBJECTS

All users of this report are cautioned that there was no requirement for Universal Engineering Sciences to attempt to locate any man-made buried objects during the course of this exploration and that no attempt was made by Universal Engineering Sciences to locate any such buried objects. Universal Engineering Sciences cannot be responsible for any buried man-made objects which are subsequently encountered during construction that are not discussed within the text of this report.

TIME

This report reflects the soil conditions at the time of exploration. If the report is not used in a reasonable amount of time, significant changes to the site may occur and additional reviews may be required.

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SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

B. Related Requirements:

1. Section 312000 "Site Clearing, Stripping and Grubbing" for drainage fill under slabs-on-grade.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Florida Green Building Coalition Submittals:

1. Product Data for Credit M1.02: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content. Include budget documentation.
2. Design Mixtures for Credit M1.02: For each concrete mixture containing fly ash as a replacement for Portland cement or other portland cement replacements, and for equivalent concrete mixtures that do not contain portland cement replacements.
3. Construction Waste Recycling Plan for Credit M2.01: Documentation indicating a waste management plan, quantifying material diversion goals. Include statement indicating monthly waste reports of recycled and/or salvaged construction waste, minimum of 50% by weight or volume. Reports to indicate diverted waste and calculate the total waste material diversion rate.

C. Design Mixtures: For each concrete mixture.

D. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement.

1.3 INFORMATIONAL SUBMITTALS

A. Material certificates.

B. Material test reports.

C. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer, detailing fabrication, assembly, and support of formwork.

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

1.4 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. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

1.5 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on concrete mixtures.

1.6 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 306.1.

1. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

B. Hot-Weather Placement: Comply with ACI 301.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301.
2. ACI 117.
3. ACI 318

2.2 FORM-FACING MATERIALS

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

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.

2.3 STEEL REINFORCEMENT

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 60 percent.

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

C. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, plain, fabricated from as-drawn steel wire into flat sheets.

2.4 CONCRETE MATERIALS

A. Cementitious Materials:

1. Portland Cement: ASTM C 150/C 150M, Type I Type II Type I/II, gray.
2. Fly Ash: ASTM C 618, Class F or C.

B. Normal-Weight Aggregates: ASTM C 33/C 33M, graded.

1. Maximum Coarse-Aggregate Size: 1-1/2 inches for footings, 3/4 inch for walls and piers, nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

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.

D. Water: ASTM C 94/C 94M.

2.5 WATERSTOPS

A. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, 3/4 by 1 inch.

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

a. Barrier-Bac; Inteplast Group, Ltd.
b. Carlisle Coatings & Waterproofing Inc.
c. CETCO, a Minerals Technologies company.
d. Concrete Sealants Inc.
e. Henry Company, Sealants Division.

f. JP Specialties, Inc.
g. Sika Greenstreak.

2.6 VAPOR RETARDERS

A. Sheet Vapor Retarder: ASTM E 1745, Class A. Include manufacturer's recommended adhesive or pressure-sensitive tape.

1. Manufacturers: Subject to compliance with requirements, available products that may be incorporated into the Work include, but not limited to, the following:

a. Fortifiber Building Systems Group.
b. Grace Construction Products; W.R. Grace & Co. -- Conn.
c. Insulation Solutions, Inc.
d. Raven Industries, Inc.
e. Stego Industries, LLC.
f. W. R. Meadows, Inc.

B. Sheet Vapor Retarder: Polyethylene sheet, ASTM D 4397, not less than 10 mils thick.

2.7 CURING MATERIALS

A. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.

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

a. Anti-Hydro International, Inc.
b. BASF Corporation; Construction Systems.
c. ChemMasters, Inc.
d. Cresset Chemical Company.
e. Dayton Superior.
f. Euclid Chemical Company (The); an RPM company.
g. Kaufman Products, Inc.
h. L&M Construction Chemicals, Inc.
i. Lambert Corporation.
j. Metalcrete Industries.
k. Nox-Crete Products Group.
l. SpecChem, LLC.
m. TK Products.
n. Vexcon Chemicals Inc.
o. W. R. Meadows, Inc.

2.8 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

2.9 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

B. Cementitious Materials: Use fly ash, pozzolan, slag cement, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent.

C. 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.

2.10 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Normal-Weight Concrete:

1. Minimum Compressive Strength: As indicated on contract drawings.
2. Maximum W/C Ratio: As indicated on contract drawings.
3. Slump Limit: 4 inches, 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
4. Air Content: 1 percent, plus or minus 1.5 percent at point of delivery for 1-1/2-inch nominal maximum aggregate size.
5. Air Content: 1 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch nominal maximum aggregate size.

2.11 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.12 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK INSTALLATION

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Chamfer exterior corners and edges of permanently exposed concrete.

3.2 EMBEDDED ITEM INSTALLATION

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.3 VAPOR-RETARDER INSTALLATION

A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.

1. Lap joints 6 inches and seal with manufacturer's recommended tape.

3.4 STEEL REINFORCEMENT INSTALLATION

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

2. Reinforcement shall be free of mud, oil, corrosion or any other coatings that would impair proper bond with the concrete.

3.5 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.

C. Construction joints shall be formed per ACI 318-14, sections 6.4.1 and 6.4.2 and shall be clean, laitance removed, wetted and standing water removed.

D. 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. 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.

E. 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.

F. Align slab joints with the finished floor control joints in hard tile.

3.6 WATERSTOP INSTALLATION

A. Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions.

3.7 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.

B. 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. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.

C. Concrete shall be carried at such a rate that the concrete is at all times plastic and flows readily into spaces between the reinforcement in accordance with ACI 318-14.

D. The following concrete is prohibited in accordance with ACI 318-14:

1. Partially hardened concrete.
2. Contaminated concrete.
3. Re-tempered concrete.
4. Concrete that has been remixed after initial set.

3.8 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, 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 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.

3.9 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 and measure surface, so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.- long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/4 inch.

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.

3.10 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. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. 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. Removal: 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.

2. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.11 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.

3.12 FIELD QUALITY CONTROL

A. Special Inspections: Contractor will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

END OF SECTION 033000

SECTION 042113 - BRICK MASONRY

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. Clay face brick.
2. Mortar and grout.
3. Ties and anchors.
4. Embedded flashing.
5. Miscellaneous masonry accessories.

B. Products Installed but not Furnished under This Section:

1. Cast-stone trim in unit masonry.
2. Steel lintels in unit masonry.
3. Steel shelf angles for supporting unit masonry.
4. Cavity wall insulation.

C. Related Requirements:

1. Section 033000 Cast-In-Place Concrete for dovetail slots for masonry anchors.
2. Section 042200 Concrete Unit Masonry for structural and non-structural concrete masonry units.
3. Section 072100 Thermal Insulation for cavity wall insulation.
4. Section 097519 Stone Trim for stone window stools.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For the following:

1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
2. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.

C. Samples for Verification: For each type and color of the following:

1. Clay face brick, in the form of straps of five or more bricks.
2. Accessories embedded in masonry.

1.5 INFORMATIONAL SUBMITTALS

A. Material Certificates: For each type and size of the following:

1. Masonry units.

a. Include data on material properties and material test reports substantiating compliance with requirements.
b. For brick, include size-variation data verifying that actual range of sizes falls within specified tolerances.
c. For exposed brick, include test report for efflorescence according to ASTM C67.

2. Mortar admixtures.
3. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
4. Anchors, ties, and metal accessories.

B. Mix Designs: For each type of mortar. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.

C. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM C1093 for testing indicated.

B. Sample Panels: Build sample panels to verify selections made under Sample submittals and to demonstrate aesthetic effects. Comply with requirements in Section 014000 Quality Requirements for mockups.

1. Build sample panels for typical exterior wall in sizes approximately 60 inches (1500 mm) long by 48 inches (1200 mm) high by full thickness.
2. Build sample panels facing generally south.
3. Include corner of typical window opening at sill.
4. Clean exposed faces of panels with masonry cleaner indicated.
5. Protect approved sample panels from the elements with weather-resistant membrane.
6. Remove sample panels after completion of the masonry work and prior to Substantial Completion.
7. Approval of sample panels is for colors, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; aesthetic qualities of

workmanship; and other material and construction qualities specifically approved by Architect in writing.

a. Approval of sample panels does not constitute approval of deviations from the Contract Documents contained in sample panels unless Architect specifically approves such deviations in writing.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.

E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.8 FIELD CONDITIONS

A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

1. Extend cover a minimum of 24 inches (600 mm) down both sides of walls, and hold cover securely in place.
2. Where one wythe of multi-wythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches (600 mm) down face next to unconstructed wythe, and hold cover in place.

B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.

C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
2. Protect sills, ledges, and projections from mortar droppings.
3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.

4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F (4 deg C) and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.

E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.

B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

2.2 UNIT MASONRY, GENERAL

A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.

B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work.

2.3 BRICK

A. General: Provide shapes indicated and as follows, with exposed surfaces matching finish and color of exposed faces of adjacent units:

1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.
2. Provide special shapes for applications requiring brick of size, form, color, and texture on exposed surfaces that cannot be produced by sawing.
3. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.

B. Clay Face Brick: Facing brick complying with ASTM C216.

1. Basis of Design (either is acceptable):

a. Meridian Brick “Virginian Modular”.
b. Cherokee Brick “18th Century”.

2. Grade: SW.
3. Type: FBS.
4. Initial Rate of Absorption: Less than 30 g/30 sq. in. (30 g/194 sq. cm) per minute when tested according to ASTM C67.
5. Efflorescence: Provide brick that has been tested according to ASTM C67 and is rated "not effloresced."
6. Size (Actual Dimensions): 3-5/8 inches (92 mm) wide by 2-1/4 inches (57 mm) high by 7-5/8 inches (295 mm) long.
7. Designation: “Modular”.
8. Application: Use where brick is exposed unless otherwise indicated.
9. Provide face brick of complementary match to color range, texture, and size of existing brickwork on adjacent buildings.

2.4 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

1. Alkali content shall not be more than 0.1 percent when tested according to ASTM C114.

B. Hydrated Lime: ASTM C207, Type S.

C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.

D. Masonry Cement: ASTM C91/C91M.

1. Holcim Masonry Cement “Mortamix” Type N or approved equivalent.

E. Mortar Cement: ASTM C1329/C1329M.

F. Aggregate for Mortar: ASTM C144.

1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
2. For joints less than 1/4 inch (6 mm) thick, use aggregate graded with 100 percent passing the No. 16 (1.18-mm) sieve.
3. Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
4. Intent is to match mortar colors used on existing adjacent buildings.

G. Water: Potable.

2.5 REINFORCEMENT, TIES AND ANCHORS

A. Masonry-Joint Reinforcement for Multi-wythe Masonry, Ties and Anchors:

1. Refer to Section 042200 Concrete Unit Masonry.

2.6 EMBEDDED FLASHING MATERIALS

A. Flexible Flashing: Use one of the following unless otherwise indicated:

1. Copper-Laminated Flashing: 7-oz./sq. ft. (2-kg/sq. m) copper sheet bonded between two layers of glass-fiber cloth. Use only where flashing is fully concealed in masonry.
2. Asphalt-Coated Copper Flashing: 7-oz./sq. ft. (2-kg/sq. m) copper sheet coated with flexible asphalt. Use only where flashing is fully concealed in masonry.

B. Application: Unless otherwise indicated, use the following:

1. Where flashing is fully concealed, use flexible flashing.

C. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

D. Termination Bars for Flexible Flashing: Stainless steel bars 1/8 inch by 1 inch (3 mm by 25 mm).

2.7 MISCELLANEOUS MASONRY ACCESSORIES

A. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene or PVC.

B. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D226/D226M, Type I (No. 15 asphalt felt).

C. Weep/Cavity Vent Products: Use one of the following unless otherwise indicated:

1. Wicking Material: Absorbent rope, made from cotton or UV-resistant synthetic fiber, 1/4 to 3/8 inch (6 to 10 mm) in diameter, in length required to produce 2-inch (50-mm) exposure on exterior and 18 inches (450 mm) in cavity. Use only for weeps.

D. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.

1. “Cavity Net DT” by Wire Bond or approved equivalent.

2.8 MASONRY CLEANERS

A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.

2.9 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.

1. Do not use calcium chloride in mortar or grout.
2. Use portland cement-lime, masonry cement or mortar cement mortar unless otherwise indicated.
3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.

B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.

C. Mortar for Brick Masonry: Comply with ASTM C270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated.

1. For masonry below grade or in contact with earth, use Type M.
2. For mortar parge coats, use Type S or Type N.
3. For exterior, above-grade, brick masonry; and for other applications where another type is not indicated, use Type N.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
2. Verify that foundations are within tolerances specified.
3. Verify that reinforcing dowels are properly placed.
4. Verify that substrates are free of substances that impair mortar bond.

B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.

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

3.2 INSTALLATION, GENERAL

A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.

B. Build chases and recesses to accommodate items specified in this and other Sections.

C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.

D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.

F. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.

G. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. (30 g/194 sq. cm) per minute when tested according to ASTM C67. Allow units to absorb water so they are damp but not wet at time of laying.

3.3 TOLERANCES

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch (12 mm) or minus 1/4 inch (6 mm).
2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch (12 mm).
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch (6 mm) in a story height or 1/2 inch (12 mm) total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet (6 mm in 3 m), or 1/2-inch (12-mm) maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2-inch (12-mm) maximum.
3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2-inch (12-mm) maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2-inch (12-mm) maximum.
5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2-inch (12-mm) maximum.

6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet (6 mm in 3 m), or 1/2-inch (12-mm) maximum.
7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch (1.5 mm) except due to warpage of masonry units within tolerances specified for warpage of units.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm), with a maximum thickness limited to 1/2 inch (12 mm).
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch (3 mm).
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch (9 mm) or minus 1/4 inch (6 mm).
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm). Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch (3 mm).
5. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch (1.5 mm) from one masonry unit to the next.

3.4 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal 4-inch (100-mm) horizontal face dimensions at corners or jambs.

C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 4 inches (100 mm). Bond and interlock each course of each wythe at corners. Do not use units with less-than-nominal 4-inch (100-mm) horizontal face dimensions at corners or jambs.

D. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.

E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

F. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below, and rod mortar or grout into core.

3.5 MORTAR BEDDING AND JOINTING

A. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

3.6 CAVITY WALLS

A. Bond wythes of cavity walls together using one of the following methods:

1. Masonry-Joint Reinforcement: Installed in horizontal mortar joints.

a. Where one wythe is of clay masonry and the other of concrete masonry, use adjustable-type (two-piece-type) reinforcement to allow for differential movement regardless of whether bed joints align.

B. Keep cavities clean of mortar droppings and other materials during construction. Bevel beds away from cavity, to minimize mortar protrusions into cavity. Do not attempt to trowel or remove mortar fins protruding into cavity.

C. Installing Cavity Wall Insulation: Place small dabs of adhesive, spaced approximately 12 inches (300 mm) on center both ways, on inside face of insulation boards, or attach with plastic fasteners designed for this purpose. Fit courses of insulation between wall ties and other confining obstructions in cavity, with edges butted tightly both ways. Press units firmly against inside wythe of masonry or other construction as shown.

1. Fill cracks and open gaps in insulation with crack sealer compatible with insulation and masonry.

3.7 BRICK MASONRY-JOINT REINFORCEMENT

A. General:

1. Space reinforcement not more than 16 inches (406 mm) o.c.
2. Space reinforcement not more than 8 inches (203 mm) o.c. in foundation walls.
3. Provide reinforcement not more than 8 inches (203 mm) above and below wall openings and extending 12 inches (305 mm) beyond openings.

B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.

3.8 CONTROL AND EXPANSION JOINTS

A. General: Install control- and expansion-joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.

B. Form expansion joints in brick as follows:

1. Form open joint full depth of brick wythe and of width indicated, but not less than 3/8 inch (10 mm) for installation of sealant and backer rod specified in Section 079200 "Joint Sealants."

C. Provide horizontal, pressure-relieving joints by either leaving an airspace or inserting a compressible filler of width required for installing sealant and backer rod specified in Section 079200 "Joint Sealants".

1. Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry.

3.9 FLASHING, WEEP HOLES, AND CAVITY VENTS

A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.

B. Install flashing as follows unless otherwise indicated:

1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
2. At masonry-veneer walls, extend flashing through veneer, across airspace behind veneer, and up face of CMU at least 8 inches (200 mm); lapping at least 4 inches (100 mm). Fasten upper edge of flexible flashing to CMU with termination bar or embed into horizontal bed joint at least width of face shell.
3. At lintels and shelf angles, extend flashing a minimum of 6 inches (150 mm) into masonry at each end. At heads and sills, extend flashing 6 inches (150 mm) at ends and turn up not less than 2 inches (50 mm) to form end dams.
4. Cut flexible flashing off flush with face of wall after masonry wall construction is completed.

C. Install reglets and nailers for flashing and other related construction where they are shown to be built into masonry.

D. Install weep holes in exterior wythes and veneers in head joints of first course of masonry immediately above embedded flashing.

1. Use specified weep/cavity vent products to form weep holes.
2. Use wicking material to form weep holes above flashing under brick sills. Turn wicking down at lip of sill to be as inconspicuous as possible.
3. Space weep holes formed from wicking material 16 inches (400 mm) on center.
4. Trim wicking material flush with outside face of wall after mortar has set.

E. Place cavity drainage material in cavities to comply with configuration requirements for cavity drainage material in "Miscellaneous Masonry Accessories" Article.

3.10 REPAIRING, POINTING, AND CLEANING

A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.

C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
3. Protect adjacent stone and non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
5. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
6. Contractor’s option to clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.

3.11 MASONRY WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

B. Excess Masonry Waste: Remove excess clean masonry waste that cannot be recycled, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 042113

SECTION 042200 - CONCRETE UNIT MASONRY

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. Concrete masonry units.
2. Mortar and grout.
3. Steel reinforcing bars.
4. Masonry joint reinforcement.

1.3 DEFINITIONS

A. CMU(s): Concrete masonry unit(s).

B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.4 PERFORMANCE REQUIREMENTS

A. Provide structural unit masonry that develops indicated net-area compressive strengths at 28 days.

1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602. Minimum net area compressive block strength shall be 1,900 psi.

1.5 ACTION SUBMITTALS

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

B. Florida Green Building Coalition Submittals:

1. Product Data for Credit M1.02: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content. Include budget documentation.
2. Construction Waste Recycling Plan for Credit M2.01: Documentation indicating a waste management plan, quantifying material diversion goals. Include statement indicating monthly

waste reports of recycled and/or salvaged construction waste, minimum of 50% by weight or volume. Reports to indicate diverted waste and calculate the total waste material diversion rate.

C. Shop Drawings: For the following:

1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
2. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement."

1.6 INFORMATIONAL SUBMITTALS

A. Material Certificates: For each type and size of the following:

1. Masonry units.

a. Include material test reports substantiating compliance with requirements.
b. For masonry units, include data and calculations establishing average net-area compressive strength of units.

2. Cementitious materials. Include brand, type, and name of manufacturer.
3. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
4. Grout mixes. Include description of type and proportions of ingredients.
5. Reinforcing bars.
6. Joint reinforcement.
7. Anchors, ties, and metal accessories.

1.7 QUALITY ASSURANCE

A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.

B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

C. Masonry Standard: Comply with ACI 530.1/ASCE 6/TMS 602 unless modified by requirements in the Contract Documents.

D. Sample Panels: Build sample panels to verify selections made under Sample submittals and to demonstrate aesthetic effects. Comply with requirements in Section 042113 "Brick Masonry" for masonry mockups.

1. Build sample panels for each type of exposed unit masonry construction in sizes approximately 48 inches long by 48 inches high by full thickness.
2. Sample panels are not to be part of permanent construction. Panels shall be constructed in a protected area and remain in place for the duration of the project and/or removed as indicated by the architect.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Deliver preblended, dry mortar mix in moisture-resistant containers designed for use with dispensing silos. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in covered weatherproof dispensing silos.

1.9 PROJECT CONDITIONS

A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

1. Extend cover a minimum of 24 inches down both sides of walls and hold cover securely in place.

B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.

C. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

PART 2 - PRODUCTS

2.1 MASONRY UNITS, GENERAL

A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.

B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects will be exposed in the completed Work.

C. Fire-Resistance Ratings: Where indicated, provide units that comply with requirements for fire-resistance ratings indicated as determined by testing according to ASTM E 119, by equivalent masonry thickness, or by other means, as acceptable to authorities having jurisdiction.

2.2 CONCRETE MASONRY UNITS

A. Regional Materials: CMUs shall be manufactured within 500 miles of Project site from aggregates that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles of Project site.

B. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.

1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.

C. CMUs: ASTM C 90.

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2150 psi.
2. Density Classification: Normal weight.

2.3 CONCRETE AND MASONRY LINTELS

A. General: Provide one of the following:

B. Concrete Lintels: Precast or formed-in-place concrete lintels complying with requirements in Section 033000 "Cast-in-Place Concrete," and with reinforcing bars indicated.

C. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

2.4 MORTAR AND GROUT MATERIALS

A. Regional Materials: Aggregate for mortar and grout shall be extracted, harvested, or recovered, as well as manufactured, within 500 miles of Project site.

B. Portland Cement: ASTM C 150, Type I or II.

C. Hydrated Lime: ASTM C 207, Type S.

D. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.

E. Masonry Cement: ASTM C 91.

F. Mortar Cement: ASTM C 1329.

G. Aggregate for Mortar: ASTM C 144.

H. Aggregate for Grout: ASTM C 404.

I. Water: Potable.

2.5 REINFORCEMENT

A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60.

B. Masonry Joint Reinforcement, General: ASTM A 951/A 951M.

1. Hot-dip galvanized, carbon steel.
2. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.

C. Masonry Joint Reinforcement for Single-Wythe Masonry: Either ladder or truss type with single pair of side rods.

D. Masonry-Joint Reinforcement and Brick Ties for Multiwythe Masonry:

1. Adjustable (two-piece) type, either ladder or truss design, with one side rod at each face shell of backing wythe and with separate adjustable ties with pintle-and-eye connections having a maximum horizontal play of 1/16 inch and maximum vertical adjustment of 1-1/4 inches. Size ties to extend at least halfway through facing wythe but with at least 5/8-inch cover on outside face. All wires shall be a minimum of 9 gage.

E. Adjustable Anchors for Connecting to Concrete: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

1. Connector Section: Dovetail tabs for inserting into dovetail slots in concrete and attached to tie section; formed 0.105-inch- thick steel sheet, galvanized after fabrication.

F. Adjustable Anchors for Connecting to Structural Steel and Light Gage Framing: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall. the system shall be capable of resisting a minimum 250 pound tensile or compressive load.

1. Anchor Section for Welding to Steel Frame: Crimped 1/4-inch diameter, hot-dip galvanized-steel wire.
2. Screw-Attached, Masonry-Veneer Anchors: Wire tie and a gasketed sheet metal anchor section, with pronged legs of length to match thickness of insulation or sheathing and raised rib-stiffened strap to provide a slot for inserting wire tie.

2.6 MISCELLANEOUS MASONRY ACCESSORIES

A. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and hold reinforcing bars in center of cells. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.

B. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene or PVC.

C. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 or PVC, complying with ASTM D 2287, Type PVC-65406 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.

2.7 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.

B. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated.
   1. For reinforced masonry, use type M or S.

C. Grout for Unit Masonry: Comply with ASTM C 476.

   1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
   2. Proportion grout in accordance with ASTM C 476, Table 1 or paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi.
   3. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143/C 143M.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

   1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
   2. Verify that foundations are within tolerances specified.
   3. Verify that reinforcing dowels are properly placed.

B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.

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

3.2 INSTALLATION, GENERAL

A. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

3.3 TOLERANCES

A. Dimensions and Locations of Elements:

   1. For dimensions in cross section or elevation do not vary by more than plus 1/2 inch or minus 1/4 inch.

2. For location of elements in plan do not vary from that indicated by more than plus or minus 1/2 inch.
3. For location of elements in elevation do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls do not vary from level by more than 1/4 inch in 10 feet, or 1/2 inch maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
3. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
5. For lines and surfaces do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2 inch maximum.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch.

3.4 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed concrete unit masonry in running bond; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.

C. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar before laying fresh masonry.

3.5 MORTAR BEDDING AND JOINTING

A. Lay hollow CMUs as follows:

1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
2. With flat ended block (sash block) provide head joints a minimum 2" deep.
3. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
4. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
5. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.

B. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

C. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

3.6 MASONRY JOINT REINFORCEMENT

A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.

1. Space reinforcement not more than 16 inches o.c vertically.
2. Space reinforcement not more than 8 inches o.c. vertically in foundation walls and parapet walls.
3. Provide reinforcement at first and second block courses above and below wall openings and extending 24 inches beyond openings in addition to continuous reinforcement.

B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.

C. Provide continuity at wall intersections by using prefabricated T-shaped units.

D. Provide continuity at corners by using prefabricated L-shaped units.

E. Cut and bend reinforcing units as directed by manufacturer for continuity at corners**,** returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.7 ANCHORED MASONRY VENEERS

A. Anchor masonry veneers to wall framing and concrete and masonry backup with[masonry-veneer anchors to comply with the following requirements:

1. Fasten screw-attached anchors through sheathing to wall framing with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener. Screw type fasteners are only permitted at light gage framing.
2. Embed connector sections and continuous wire in masonry joints.
3. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
4. Space anchors as indicated, but not more than 16 inches o.c. vertically and 24 inches o.c. horizontally, with not less than one anchor for each 2.67 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 8 inches, around perimeter.
5. Ties shall extend at least 1-1/2 inches (38 mm) into veneer but with at least a 5/8-inch (16-mm) cover on outside face.

3.8 LINTELS

A. Provide concrete or masonry lintels where shown and where openings of more than 24 inches for block-size units are shown without structural steel or other supporting lintels.

B. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

3.9 REINFORCED UNIT MASONRY INSTALLATION

A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.

1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other loads that may be placed on them during construction.

B. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.

C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.

1. Comply with requirements in ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.

3.10 FIELD QUALITY CONTROL

1. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement. Place grout only after inspectors have verified proportions of site-prepared grout.

3.11 REPAIRING, POINTING, AND CLEANING

A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.

C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.

3.12 MASONRY WASTE DISPOSAL

A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

B. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.

END OF SECTION 042200

SECTION 047200 - CAST STONE MASONRY

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. Window sills.
2. Wall caps.
3. Mortar materials.
4. Accessories.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. For cast stone units, include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: Show fabrication and installation details for cast stone units. Include dimensions, details of reinforcement and anchorages if any, and indication of finished faces.

1. Include building and wall elevations showing layout of units and locations of joints and anchors.

C. Samples for Initial Selection: For colored mortar.

D. Samples for Verification:

1. For each color and texture of cast stone required, 4 inches (100 mm) square in size.
2. For colored mortar, make Samples using same sand and mortar ingredients to be used on Project.

E. Full-Size Samples: For each color, texture and shape of cast stone unit required.

1. Make available for Architect's review at Project site by installing in masonry sample panel(s).

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer of cast stone units similar to those indicated for this Project, that has sufficient production capacity to manufacture required units, and is a plant certified by CSI or APA.

B. Furnish cast stone for installation in mockups specified in Section 042113 Brick Masonry.

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

1. Build mockup for window sills and wall caps installation including accessories.

a. Size: Full size as indicated on Drawings.

2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Coordinate delivery of cast stone with unit masonry work to avoid delaying the Work and to minimize the need for on-site storage.

B. Pack, handle, and ship cast stone units in suitable packs or pallets.

1. Lift with wide-belt slings; do not use wire rope or ropes that might cause staining. Move cast stone units if required, using dollies with wood supports.
2. Store cast stone units on wood skids or pallets with non-staining, waterproof covers, securely tied. Arrange to distribute weight evenly and to prevent damage to units. Ventilate under covers to prevent condensation.

C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

D. Store mortar aggregates where grading and other required characteristics can be maintained and contamination can be avoided.

1.6 PROJECT CONDITIONS

A. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Comply with cold-weather construction requirements in TMS 602.

1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F (4 deg C) and above and will remain so until cast stone has dried, but no fewer than seven days after completing cleaning.

B. Hot-Weather Requirements: Comply with hot-weather construction requirements in TMS 602.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Cast Stone: Obtain cast stone units from single source from single manufacturer.

B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color, from one manufacturer for each cementitious component and from one source or producer for each aggregate.

2.2 CAST STONE MATERIALS

A. General: Comply with ASTM C1364.

B. Portland Cement: ASTM C150/C150M, Type I or Type III, containing not more than 0.60 percent total alkali when tested according to ASTM C114. Provide natural color or white cement as required to produce cast stone color indicated.

C. Coarse Aggregates: Granite, quartz, or limestone complying with ASTM C33/C33M; gradation and colors as needed to produce required cast stone textures and colors.

D. Fine Aggregates: Natural sand or crushed stone complying with ASTM C33/C33M, gradation and colors as needed to produce required cast stone textures and colors.

E. Color Pigment: ASTM C979/C979M, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, nonfading, and resistant to lime and other alkalis.

F. Admixtures: Use only admixtures specified or approved in writing by Architect.

1. Do not use admixtures that contain more than 0.1 percent water-soluble chloride ions by mass of cementitious materials. Do not use admixtures containing calcium chloride.
2. Use only admixtures that are certified by manufacturer to be compatible with cement and other admixtures used.
3. Air-Entraining Admixture: ASTM C260/C260M. Add to mixes for units exposed to the exterior at manufacturer's prescribed rate to result in an air content of 4 to 6 percent, except do not add to zero-slump concrete mixes.
4. Water-Reducing Admixture: ASTM C494/C494M, Type A.
5. Water-Reducing, Retarding Admixture: ASTM C494/C494M, Type D.
6. Water-Reducing, Accelerating Admixture: ASTM C494/C494M, Type E.

G. Reinforcement:

1. Deformed steel bars complying with ASTM A615/A615M, Grade 40 (Grade 280). Use galvanized or epoxy-coated reinforcement when covered with less than 1-1/2 inches (38 mm) of cast stone material.

a. Epoxy Coating: ASTM A775/A775M.
b. Galvanized Coating: ASTM A767/A767M.

2. Plain-Steel, Welded-Wire Reinforcement: ASTM A1064/A1064M, plain, fabricated from as-drawn steel wire into flat sheets.
3. Galvanized-Steel, Welded-Wire Reinforcement: ASTM A1064/A1064M, plain, fabricated from galvanized-steel wire into flat sheets.
4. Fiber Reinforcement: ASTM C1116/C1116M.

H. Embedded Anchors and Other Inserts: Fabricated from stainless steel complying with ASTM A240/A240M, ASTM A276/A276M, or ASTM A666, Type 304.

2.3 CAST STONE UNITS

A. Basis of Design – Color and Texture:

1. #2LA “Light Buff” (Light Acid Finish); Pedroni’s Cast Stone, Jacksonville, Florida.
2. “Double Tan”; The Cast Stone Company/Tannerstone, Palmetto, Georgia.

B. Cast Stone Units: Comply with ASTM C1364.

1. Units shall be manufactured using the manufacturer's selected method.

2. Trim units including window sills and wall caps as indicated on Drawings.

C. Fabricate units with sharp arris and accurately reproduced details, with indicated texture on all exposed surfaces unless otherwise indicated.

1. Slope exposed horizontal surfaces 1:12 to drain unless otherwise indicated.
2. Provide raised fillets at backs of sills and at ends indicated to be built into jambs.
3. Provide drips on projecting elements unless otherwise indicated.

D. Fabrication Tolerances:

1. Variation in Cross Section: Do not vary from indicated dimensions by more than 1/8 inch (3 mm).
2. Variation in Length: Do not vary from indicated dimensions by more than 1/360 of the length of unit or 1/8 inch (3 mm), whichever is greater, but in no case by more than 1/4 inch (6 mm).
3. Warp, Bow, and Twist: Not to exceed 1/360 of the length of unit or 1/8 inch (3 mm), whichever is greater.
4. Location of Grooves, False Joints, Holes, Anchorages, and Similar Features: Do not vary from indicated position by more than 1/8 inch (3 mm) on formed surfaces of units and 3/8 inch (10 mm) on unformed surfaces.

E. Cure Units as Follows:

1. Cure units in enclosed, moist curing room at 95 percent relative humidity and temperature of 100 deg F (38 deg C) for 12 hours or 70 deg F (21 deg C) for 16 hours.
2. Keep units damp and continue curing to comply with one of the following:

   a. No fewer than five days at mean daily temperature of 70 deg F (21 deg C) or above.
   b. No fewer than seven days at mean daily temperature of 50 deg F (10 deg C) or above.

F. Acid etch units after curing to remove cement film from surfaces to be exposed to view.

G. Colors and Textures: Match existing window sill units. Refer to Basis of Design above.

2.4 MORTAR MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

B. Hydrated Lime: ASTM C207, Type S.

C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.

D. Masonry Cement: ASTM C91/C91M.

1. Holcim Masonry Cement “Mortamix” Type N or approved equivalent.

E. Mortar Cement: ASTM C1329/C1329M.

F. Colored Cement Products: Packaged blend made from portland cement and hydrated lime and mortar pigments, all complying with specified requirements, and containing no other ingredients.

1. Formulate blend as required to produce color indicated or, if not indicated, as selected from manufacturer's standard colors.
2. Pigments shall not exceed 10 percent of portland cement by weight.

G. Preblended Dry Mortar Mix: Packaged blend made from portland cement and hydrated lime, sand, mortar pigments, water repellents, and admixtures and complying with ASTM C1714/C1714M.

H. Aggregate for Mortar: ASTM C144.

1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
2. For joints less than 1/4 inch (6 mm) thick, use aggregate graded with 100 percent passing the No. 16 (1.18-mm) sieve.
3. White-Mortar Aggregates: Natural white sand or crushed white stone.
4. Colored Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

I. Water: Potable.

2.5 ACCESSORIES

A. Anchors: Type and size indicated, fabricated from Type 304 stainless steel complying with ASTM A240/A240M, ASTM A276/A276M, or ASTM A666.

B. Dowels: 1/2-inch- (12-mm-) diameter round bars, fabricated from Type 304 stainless steel complying with ASTM A240/A240M, ASTM A276/A276M, or ASTM A666.

C. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cast stone manufacturer and expressly approved by cleaner manufacturer for use on cast stone and adjacent masonry materials.

2.6 MORTAR MIXES

A. Do not use admixtures including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.

1. Do not use calcium chloride in mortar or grout.
2. Use portland cement-lime mortar unless otherwise indicated.

B. Comply with ASTM C270, Proportion Specification.

1. For setting mortar, use Type N.
2. For pointing mortar, use Type N.

C. Preblended dry mortar mix complying with ASTM C1714/C1714M and capable of producing mortar strength as indicated in ASTM C270.

1. For setting mortar, use Type N.
2. For pointing mortar, use Type N.

D. Pigmented Mortar: Use colored cement product or select and proportion pigments with other ingredients to produce color required. Do not add pigments to colored cement products.

1. Pigments shall not exceed 10 percent of portland cement by weight.
2. Pigments shall not exceed 5 percent of mortar cement by weight.
3. Mix to match Architect's sample.
4. Application: Use pigmented mortar for exposed mortar joints.

E. Colored-Aggregate Mortar: Produce required mortar color by using colored aggregates and natural color or white cement as necessary to produce required mortar color.

1. Mix to match existing cast stone mortar.
2. Application: Use colored-aggregate mortar for exposed mortar joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

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

3.2 SETTING CAST STONE IN MORTAR

A. Set cast stone as indicated in TMS 604.

B. Set cast stone as indicated on Drawings. Set units accurately in locations indicated, with edges and faces aligned according to established relationships and indicated tolerances.

1. Install anchors, supports, fasteners, and other attachments indicated or necessary to secure units in place.
2. Coordinate installation of cast stone with installation of flashing specified in other Sections.

C. Wet joint surfaces thoroughly before applying mortar or setting in mortar.

D. Set units in full bed of mortar with full head joints unless otherwise indicated.

1. Set units with joints 1/4 to 3/8 inch (6 to 10 mm) wide unless otherwise indicated.
2. Build anchors and ties into mortar joints as units are set.
3. Fill dowel holes and anchor slots with mortar.
4. Build concealed flashing into mortar joints as units are set.
5. Keep head joints in copings and between other units with exposed horizontal surfaces open to receive sealant.
6. Keep joints at shelf angles open to receive sealant.

E. Tool exposed joints slightly concave when thumbprint hard. Use a smooth plastic jointer larger than joint thickness.

F. Provide sealant joints at head joints of copings and other horizontal surfaces; at expansion, control, and pressure-relieving joints; and at locations indicated.

1. Keep joints free of mortar and other rigid materials.
2. Build in compressible foam-plastic joint fillers where indicated.
3. Form joint of width indicated, but not less than 3/8 inch (10 mm).
4. Prime cast stone surfaces to receive sealant and install compressible backer rod in joints before applying sealant unless otherwise indicated.
5. Prepare and apply sealant of type and at locations indicated to comply with applicable requirements in Section 079200 Joint Sealants.

3.3 INSTALLATION TOLERANCES

A. Variation from Plumb and Level: Do not exceed requirements specified for masonry in Sections 042200 Unit Masonry and 042113 Brick Masonry maximum.

B. Variation in Joint Width: Do not vary joint thickness more than 1/8 inch in 36 inches (3 mm in 900 mm) or one-fourth of nominal joint width, whichever is less.

C. Variation in Plane between Adjacent Surfaces (Lipping): Do not vary from flush alignment with adjacent units or adjacent surfaces indicated to be flush with units by more than 1/16 inch (1.5 mm), except where variation is due to warpage of units within tolerances specified.

3.4 ADJUSTING AND CLEANING

A. Remove and replace stained and otherwise damaged units and units not matching approved Samples. Cast stone may be repaired if methods and results are approved by Architect.

B. Replace units in a manner that results in cast stone matching approved Samples, complying with other requirements, and showing no evidence of replacement.

C. In-Progress Cleaning: Clean cast stone as work progresses.

1. Remove mortar fins and smears before tooling joints.
2. Remove excess sealant immediately, including spills, smears, and spatter.

D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed cast stone as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on sample; leave one sample uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of cast stone.
3. Protect adjacent surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
4. Wet surfaces with water before applying cleaners; remove cleaners promptly by rinsing thoroughly with clear water.
5. Clean cast stone with proprietary acidic cleaner applied according to manufacturer's written instructions.

END OF SECTION 047200

SECTION 051200 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Structural steel.
2. Grout.

1.2 DEFINITIONS

A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Florida Green Building Coalition Submittals:

1. Product Data for Credit M1.02: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content. Include budget documentation.
2. Construction Waste Recycling Plan for Credit M2.01: Documentation indicating a waste management plan, quantifying material diversion goals. Include statement indicating monthly waste reports of recycled and/or salvaged construction waste, minimum of 50% by weight or volume. Reports to indicate diverted waste and calculate the total waste material diversion rate.

C. Shop Drawings: Show fabrication of structural-steel components. Submit shop drawings signed and sealed by and engineer registered in the State of Florida.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer, fabricator, testing agency.

B. Welding certificates.

C. Mill test reports for structural steel, including chemical and physical properties.

D. Source quality-control reports.

E. Field quality-control reports.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category BU.

B. Installer Qualifications: A qualified installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category CSEA.

C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel." Welder certifications shall be current (less than one year from issuance) at all times during the project.

D. Comply with applicable provisions of the following specifications and documents:

1. AISC 303.
2. AISC 360.
3. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Connections: Provide details of simple shear connections required by the Contract Documents to be selected or completed by structural-steel fabricator to withstand loads indicated and comply with other information and restrictions indicated.

1. Select and complete connections using AISC 360.
2. Use Allowable Stress Design; data are given at service-load level.

B. Moment Connections: Type FR, fully restrained.

C. Construction: Shear wall system.

2.2 STRUCTURAL-STEEL MATERIALS

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 50 percent.

B. W-Shapes: ASTM A 992/A 992M.

C. Channels, Angles-Shapes: ASTM A 36/A 36M.

D. Plate and Bar: ASTM A 36/A 36M.

E. Cold-Formed Hollow Structural Sections: ASTM A 500/A 500M, Grade B, structural tubing.

F. Steel Pipe: ASTM A 53/A 53M, Type E or Type S, Grade B.

G. Welding Electrodes: Comply with AWS requirements.

2.3 BOLTS, CONNECTORS, AND ANCHORS

A. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade C, heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers; all with plain finish.

1. Direct-Tension Indicators: ASTM F 959, Type 325, compressible-washer type with plain finish.

B. High-Strength Bolts, Nuts, and Washers: ASTM A 490, Type 1, heavy-hex steel structural bolts or tension-control, bolt-nut-washer assemblies with splined ends; ASTM A 563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers with plain finish.

1. Direct-Tension Indicators: ASTM F 959, Type 490, compressible-washer type with plain finish.

C. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 1, heavy-hex head assemblies consisting of steel structural bolts with splined ends, heavy-hex carbon-steel nuts, and hardened carbon-steel washers.

1. Finish: Plain.

D. Shear Connectors: ASTM A 108, Grades 1015 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1/D1.1M, Type B.

E. Unheaded Anchor Rods: ASTM F 1554, Grade 36 ASTM F 1554, Grade 55, weldable.

1. Configuration: Straight.
2. Finish: Plain.

F. Headed Anchor Rods: ASTM F 1554, Grade 36 ASTM F 1554, Grade 55, weldable, straight.

1. Finish: Plain.

G. Threaded Rods: ASTM A 36/A 36M.

1. Finish: Plain.

2.4 PRIMER

A. Low-Emitting Materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

B. Primer: SSPC-Paint 25, Type I Type II, zinc oxide, alkyd, linseed oil primer.

2.5 GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107/C 1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.6 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," and to AISC 360.

B. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M and manufacturer's written instructions.

2.7 SHOP CONNECTIONS

A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.

1. Joint Type: Snug tightened (Typ), Slip critical (Braced Frames).

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

2.8 SHOP PRIMING

A. Shop prime steel surfaces except the following:

1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
2. Surfaces to be field welded.
3. Surfaces of high-strength bolted, slip-critical connections.
4. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
5. Galvanized surfaces.
6. Surfaces enclosed in interior construction.

B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:

1. SSPC-SP 2, "Hand Tool Cleaning."
2. SSPC-SP 3, "Power Tool Cleaning."
3. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."

C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

2.9 SOURCE QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform shop tests and inspections.

1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.

B. Bolted Connections: Inspect shop-bolted connections according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

C. Welded Connections: Visually inspect shop-welded connections according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

1. Liquid Penetrant Inspection: ASTM E 165.
2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
3. Ultrasonic Inspection: ASTM E 164.
4. Radiographic Inspection: ASTM E 94.

D. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

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

3.2 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.

B. Baseplates Bearing Plates and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Weld plate washers to top of baseplate.
3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.

4. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.

C. Maintain erection tolerances of structural steel within AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

D. All field welds to be painted with manufacturer's standard approved primer.

3.3 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.

1. Joint Type: Snug tightened (Typ), Slip critical (Braced Frames).

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
2. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," for mill material.

3.4 FIELD QUALITY CONTROL

A. Special Inspections: Engage a qualified special inspector to perform the following special inspections:

1. Verify structural-steel materials and inspect steel frame joint details.
2. Verify weld materials and inspect welds.
3. Verify connection materials and inspect high-strength bolted connections.

B. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

C. Bolted Connections: Inspect bolted connections according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

D. Welded Connections: Visually inspect field welds according to AWS D1.1/D1.1M.

1. In addition to visual inspection, test and inspect field welds according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

a. Liquid Penetrant Inspection: ASTM E 165.
b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
c. Ultrasonic Inspection: ASTM E 164.

END OF SECTION 051200

SECTION 053100 - STEEL DECKING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Roof deck.
2. Composite floor deck.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of deck, accessory, and product indicated.

B. Florida Green Building Coalition Submittals:

1. Product Data for Credit M1.02: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content. Include budget documentation.
2. Construction Waste Recycling Plan for Credit M2.01: Documentation indicating a waste management plan, quantifying material diversion goals. Include statement indicating monthly waste reports of recycled and/or salvaged construction waste, minimum of 50% by weight or volume. Reports to indicate diverted waste and calculate the total waste material diversion rate.

C. Shop Drawings:

1. Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

1.3 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Product certificates.

C. Evaluation reports.

D. Field quality-control reports.

1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.

B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel." Welder certifications shall be current (less than one year from issuance) at all times during the project.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."

B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

C. Low-Emitting Materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 ROOF DECK

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

1. ASC Profiles, Inc.
2. Canam Steel Corporation; Canam Group, Inc.
3. CMC Joist & Deck.
4. Consolidated Systems, Inc.
5. Cordeck.
6. DACS, Inc.
7. Epic Metals Corporation.
8. Marlyn Steel Decks, Inc.
9. New Millennium Building Systems, LLC.
10. Nucor Corp.
11. Roof Deck, Inc.
12. Valley Joist.
13. Verco Decking, Inc., a Nucor company.

B. Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:

1. Galvanized-Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, G90 zinc coating.

2. Galvanized and Shop-Primed Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, G60 zinc coating; cleaned, pretreated, and primed with manufacturer's standard baked-on, rust-inhibitive primer.

    a. Color: Manufacturer's standard.

3. Deck Profile: As indicated.
4. Profile Depth: As indicated.
5. Design Uncoated-Steel Thickness: As indicated.

2.3 COMPOSITE FLOOR DECK

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

1. ASC Profiles, Inc.
2. Canam Steel Corporation; Canam Group, Inc.
3. CMC Joist & Deck.
4. Consolidated Systems, Inc.
5. Cordeck.
6. DACS, Inc.
7. Epic Metals Corporation.
8. Marlyn Steel Decks, Inc.
9. New Millennium Building Systems, LLC.
10. Nucor Corp.
11. Roof Deck, Inc.
12. Verco Decking, Inc., a Nucor company.

B. Composite Floor Deck: Fabricate panels, with integrally embossed or raised pattern ribs and interlocking side laps, to comply with "SDI Specifications and Commentary for Composite Steel Floor Deck," in SDI Publication No. 31, with the minimum section properties indicated, and with the following:
1. Galvanized-Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, G60 zinc coating.
2. Profile Depth: As indicated.
3. Design Uncoated-Steel Thickness: As indicated.

2.4 ACCESSORIES

A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.

B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.

C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.

D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.

E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.

F. Flat Sump Plates: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck. For drains, cut holes in the field.

G. Galvanizing Repair Paint: ASTM A 780 SSPC-Paint 20 or MIL-P-21035B, with dry film containing a minimum of 94 percent zinc dust by weight].

H. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, and requirements in this Section.

B. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.

C. Place deck panels flat and square and fasten to supporting frame without warp or deflection.

D. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.

E. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.

F. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.

3.2 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Field welds will be subject to inspection.

C. Testing agency will report inspection results promptly and in writing to Contractor and Architect.

D. Remove and replace work that does not comply with specified requirements.

E. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

3.3 PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on both surfaces of prime-painted deck immediately after installation, and apply repair paint.

END OF SECTION 053100

SECTION 054400 - COLD-FORMED METAL TRUSSES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cold-formed steel trusses for roofs.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Florida Green Building Coalition Submittals:

1. Product Data for Credit M1.02: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content. Include budget documentation.
2. Construction Waste Recycling Plan for Credit M2.01: Documentation indicating a waste management plan, quantifying material diversion goals. Include statement indicating monthly waste reports of recycled and/or salvaged construction waste, minimum of 50% by weight or volume. Reports to indicate diverted waste and calculate the total waste material diversion rate.

C. Shop Drawings:

1. Include layout, spacings, sizes, thicknesses, and types of cold-formed steel trusses; fabrication; and fastening and anchorage details, including mechanical fasteners.
2. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.
3. Provide signed and sealed calculations and shop drawings by an engineer registered in the state of Florida.

D. Delegated-Design Submittal: For cold-formed steel trusses.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Welding certificates.

C. Product test reports.

D. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.

B. Product Tests: Mill certificates or data from a qualified testing agency indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.

C. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

D. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel." Welder certifications shall be current (less than one year from issuance) at all times during the project.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

1. Aegis Metal Framing.
2. Marino\WARE.
3. TrusSteel; an ITW company.
4. USA Frametek.
5. WESTCO Steel Systems, Inc.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design cold-formed steel framing. The light gage truss supplier shall submit shop drawings and calculations signed and sealed by an engineer registered in the state of Florida.

B. Structural Performance: Provide cold-formed steel trusses capable of withstanding design loads within limits and under conditions indicated.

1. Design Loads: As indicated.

2. Deflection Limits: Design trusses to withstand design loads without deflections greater than the following:

a. Roof Trusses: Vertical deflection of 1/360 of the span.

3. Design framing systems to provide for movement of framing members located outside the insulated building envelope without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 deg F.

C. Cold-Formed Steel Framing Design Standards:

1. Floor and Roof Systems: Design according to AISI S210.
2. Lateral Design: Design according to AISI S213.
3. Roof Trusses: Design according to AISI S214.

D. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

2.3 COLD-FORMED STEEL TRUSS MATERIALS

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

B. Steel Sheet: ASTM A 1003/A 1003M, structural grade, Type H, metallic coated, of grade and coating weight as follows:

1. Grade: As required by structural performance.
2. Coating: G60.

2.4 ROOF TRUSSES

A. Roof Truss Members: Manufacturer's standard C-shaped steel sections.

1. Connecting Flange Width: 1-5/8 inches, minimum at top and bottom chords connecting to sheathing or other directly fastened construction.
2. Minimum Base-Metal Thickness: 0.0538 inch.

2.5 ACCESSORIES

A. Fabricate steel-framing accessories from steel sheet, ASTM A 1003/A 1003M, structural grade, Type H, metallic coated, of same grade and coating weight used for truss members.

B. Provide accessories of manufacturer's standard thickness and configuration unless otherwise indicated.

2.6 ANCHORS, CLIPS, AND FASTENERS

A. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123/A 123M.

B. Anchor Bolts: ASTM F 1554, Grade 36, threaded carbon-steel hex-headed bolts and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A 153/A 153M, Class C.

C. Expansion Anchors: Fabricated from corrosion-resistant materials, with allowable load or strength design capacities calculated according to ICC-ES AC193 and Appendix D in ACI 318, greater than or equal to the design load, as determined by testing per ASTM E 488 conducted by a qualified testing agency.

D. Power-Actuated Fasteners: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, allowable load capacities calculated according to ICC-ES AC70, greater than or equal to the design load, as determined by testing per ASTM E 1190 conducted by a qualified testing agency. Powder actuated fasteners usage on school sites must be approved in advanced by owner.

E. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping steel drill screws.

1. Head Type: Low-profile head beneath sheathing; manufacturer's standard elsewhere.

F. Welding Electrodes: Comply with AWS standards.

2.7 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: ASTM A 780.

B. Shims: Load bearing, of high-density multimonomer plastic, nonleaching; or of cold-formed steel of same grade and coating as framing members supported by shims.

2.8 FABRICATION

A. Fabricate cold-formed steel trusses and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.

1. Fabricate trusses using jigs or templates.
2. Cut truss members by sawing or shearing; do not torch cut.
3. Fasten cold-formed steel truss members by welding, screw fastening, clinch fastening, pneumatic pin fastening, or riveting as standard with fabricator.

a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.

4. Fasten other materials to cold-formed steel trusses by welding, bolting, pneumatic pin fastening, or screw fastening, according to Shop Drawings.

B. Reinforce, stiffen, and brace trusses to withstand handling, delivery, and erection stresses. Lift fabricated trusses to prevent damage or permanent distortion.

C. Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:

1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
2. Squareness: Fabricate each cold-formed metal framing assembly to a maximum out-of-square tolerance of 1/8 inch.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install, bridge, and brace cold-formed steel trusses according to AISI S200, AISI S214, AISI's "Code of Standard Practice for Cold-Formed Steel Structural Framing," and manufacturer's written instructions unless more stringent requirements are indicated.

B. Install cold-formed steel trusses and accessories plumb, square, and true to line, and with connections securely fastened.

1. Fasten cold-formed steel trusses by welding or mechanical fasteners.

a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
b. Locate mechanical fasteners and install according to Shop Drawings; comply with requirements for spacing, edge distances, and screw penetration.

C. Install temporary bracing and supports. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.

D. Truss Spacing: As indicated.

E. Do not alter, cut, or remove framing members or connections of trusses.

F. Erect trusses with plane of truss webs plumb and parallel to each other, align, and accurately position at spacings indicated.

G. Erect trusses without damaging framing members or connections.

H. Coordinate with wall framing to align webs of bottom chords and load-bearing studs or continuously reinforce track to transfer loads to structure. Anchor trusses securely at all bearing points.

I. Install continuous bridging and permanently brace trusses as indicated on Shop Drawings and designed according to CFSEI's TechNote 551e, "Design Guide: Permanent Bracing of Cold-Formed Steel Trusses."

J. Erection Tolerances: Install cold-formed steel framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:

1. Space individual trusses no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.2 FIELD QUALITY CONTROL

A. Special Inspections: Engage a qualified special inspector to perform inspections.

B. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

C. Field and shop welds will be subject to testing and inspecting.

D. Prepare test and inspection reports.

3.3 REPAIRS AND PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed metal trusses are without damage or deterioration at time of Substantial Completion.

END OF SECTION 054400

SECTION 055000 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Miscellaneous steel supports.
2. Shelf angles.
3. Metal downspout sections not otherwise indicated to be of aluminum.

1.2 ACTION SUBMITTALS

A. Product Data: For the following:

1. Fasteners.
2. Shop primers.
3. Shrinkage-resisting grout.
4. Pipe downspouts.
5. Protective railings at water coolers.

B. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

PART 2 - PRODUCTS

2.1 METALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

C. Steel Tubing: ASTM A500/A500M, cold-formed steel tubing.

D. Steel Pipe: ASTM A53/A53M, Standard Weight (Schedule 40) unless otherwise indicated.

E. Cast Iron: Either gray iron, ASTM A48/A48M, or malleable iron, ASTM A47/A47M, unless otherwise indicated.

F. Aluminum Extrusions: ASTM B221 (ASTM B221M), Alloy 6063-T6.

G. Aluminum-Alloy Rolled Tread Plate: ASTM B632/B632M, Alloy 6061-T6.

H. Aluminum Castings: ASTM B26/B26M, Alloy 443.0-F.

2.2 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.

1. Provide stainless steel fasteners for fastening aluminum and stainless steel.
2. Provide bronze fasteners for fastening bronze.

B. Cast-in-Place Anchors in Concrete: Either threaded or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A47/A47M malleable iron or ASTM A27/A27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F2329/F2329M.

C. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors.

1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, unless otherwise indicated.
2. Material for Exterior Locations: Alloy Group 1 (A1) stainless steel bolts, ASTM F593 (ASTM F738M), and nuts, ASTM F594 (ASTM F836M).

2.3 MISCELLANEOUS MATERIALS

A. Shop Primers: Provide primers that comply with Section 099100 “Painting”.

B. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.

C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

E. Shrinkage-Resistant Grout: Factory-packaged, nonmetallic, non-staining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.4 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

2.5 MISCELLANEOUS SUPPORTS

A. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.

2.6 SHELF ANGLES

A. Fabricate shelf angles from steel angles of sizes indicated and for attachment to concrete framing. Provide horizontally slotted holes to receive 3/4-inch (19-mm) bolts, spaced not more than 6 inches (150 mm) from ends and 24 inches (600 mm) o.c., unless otherwise indicated.

1. Provide mitered and welded units at corners.
2. Provide open joints in shelf angles at expansion and control joints. Make open joint approximately 2 inches (50 mm) larger than expansion or control joint.

B. For cavity walls, provide vertical channel brackets to support angles from backup masonry and concrete.

C. Galvanize shelf angles located in exterior walls.

D. Furnish wedge-type concrete inserts, complete with fasteners, to attach shelf angles to cast-in-place concrete unless otherwise indicated.

2.7 MISCELLANEOUS STEEL TRIM

A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.

B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.

C. Galvanize exterior miscellaneous steel trim.

2.8 PIPE DOWNSPOUTS

A. Fabricate pipe downspout guards from round 4 inch (101-mm), Schedule 40 galvanized steel pipe. Provide steel clip angles welded to pipe for anchorage to walls allowing 2-1/2 inch (63-mm) minimum clearance between pipe and pipe guard. Drill each clip angle for one 3/8-inch (10-mm) anchor bolts.

B. Galvanize steel pipe downspout assemblies.

2.9 LOOSE STEEL LINTELS

A. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Fabricate in single lengths for each opening unless otherwise indicated. Weld adjoining members together to form a single unit where indicated.

B. Galvanize loose steel lintels located in exterior walls.

2.10 STEEL WELD PLATES AND ANGLES

A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work.

2.11 GENERAL FINISH REQUIREMENTS

A. Finish metal fabrications after assembly.

2.12 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153/A153M for steel and iron hardware and with ASTM A123/A123M for other steel and iron products.

1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.

B. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete or masonry, or unless otherwise indicated.

C. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts and other connectors as required.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete and masonry.

3.2 INSTALLATION OF MISCELLANEOUS FRAMING AND SUPPORTS

A. Install supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

B. Anchor shelf angles securely with expansion anchors or anchor bolts unless otherwise indicated.

3.3 REPAIRS

A. Touchup Painting:

1. Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

END OF SECTION 055000

SECTION 055113 - METAL PAN STAIRS

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. Preassembled steel stairs with concrete-filled treads.
2. Steel railings and guards attached to metal stairs.
3. Steel handrails attached to walls adjacent to metal stairs.

1.3 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written instructions to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorages for metal stairs, railings, and guards.

1. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry.
2. Deliver such items to Project site in time for installation.

C. Coordinate locations of hanger rods and struts with other work so they do not encroach on required stair width and are within fire-resistance-rated stair enclosure.

D. Schedule installation of railings and guards so wall attachments are made only to completed walls.

1. Do not support railings and guards temporarily by any means that do not satisfy structural performance requirements.

1.4 ACTION SUBMITTALS

A. Product Data: For metal pan stairs and the following:

1. Prefilled metal-pan-stair treads.
2. Shop primer products.
3. Handrail wall brackets.

B. Shop Drawings:

1. Include plans, elevations, sections, details, and attachments to other work.
2. Indicate sizes of metal sections, thickness of metals, profiles, holes, and field joints.
3. Include plan at each level.
4. Indicate locations of anchors, weld plates, and blocking for attachment of wall-mounted handrails.

C. Delegated-Design Submittal: For stairs, railings and guards, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For professional engineer's experience with providing delegated-design engineering services of the kind indicated, including documentation that engineer is licensed in the State in which Project is located.

B. Welding certificates.

C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

B. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification.

1. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers.
2. Protect steel members and packaged materials from corrosion and deterioration.
3. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures.

    a. Repair or replace damaged materials or structures as directed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design stairs, railings and guards, including attachment to building construction.

1. Loads indicated herein are minimums. Higher loads, lower deflections or additional loading metrics may be indicated on the Drawings. Design to higher loads and all loading metrics.

B. Structural Performance of Stairs: Metal stairs shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Uniform Load: 100 lbf/sq. ft. (4.79 kN/sq. m).
2. Concentrated Load: 300 lbf (1.33 kN) applied on an area of 4 sq. in. (2580 sq. mm).
3. Uniform and concentrated loads need not be assumed to act concurrently.
4. Stair Framing: Capable of withstanding stresses resulting from railing and guard loads in addition to loads specified above.
5. Limit deflection of treads, platforms, and framing members to L/360 or 1/4 inch (6.4 mm), whichever is less.

C. Structural Performance of Railings and Guards: Railings and guards, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Handrails and Top Rails of Guards:

a. Uniform load of 50 lbf/ft. (0.73 kN/m) applied in any direction.
b. Concentrated load of 200 lbf (0.89 kN) applied in any direction.
c. Uniform and concentrated loads need not be assumed to act concurrently.

2. Infill of Guards:

a. Concentrated load of 50 lbf (0.22 kN) applied horizontally on an area of 1 sq. ft. (0.093 sq. m).
b. Infill load and other loads need not be assumed to act concurrently.

2.2 METALS

A. Metal Surfaces: Provide materials with smooth, flat surfaces unless otherwise indicated. For components exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

C. Steel Tubing for Railings and Guards: ASTM A500/A500M (cold formed) or ASTM A513/A513M.

D. Steel Pipe for Railings and Guards: ASTM A53/A53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.

E. Uncoated, Cold-Rolled Steel Sheet: ASTM A1008/A1008M, either commercial steel, Type B, or structural steel, Grade 25 (Grade 170), unless another grade is required by design loads; exposed.

F. Uncoated, Hot-Rolled Steel Sheet: ASTM A1011/A1011M, either commercial steel, Type B, or structural steel, Grade 30 (Grade 205), unless another grade is required by design loads.

G. Cast Iron: Either gray iron, ASTM A48/A48M, or malleable iron, ASTM A47/A47M, unless otherwise indicated.

2.3 FASTENERS

A. General: Select fasteners for type, grade and class required.

B. Fasteners for Anchoring Railings and Guards to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings and guards to other types of construction indicated and capable of withstanding design loads.

C. Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A; with hex nuts, ASTM A563 (ASTM A563M); and, where indicated, flat washers.

D. Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563 (ASTM A563M); and, where indicated, flat washers.

1. Provide mechanically deposited or hot-dip, zinc-coated anchor bolts for stairs indicated to be shop primed with zinc-rich primer.

E. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E488/E488M, conducted by a qualified independent testing agency.

1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, unless otherwise indicated.

2.4 MISCELLANEOUS MATERIALS

A. Handrail Wall Brackets: Flanged steel rod or cast bracket designed to hold near edge of rail 1-1/2 inches (38 mm) minimum from face of wall.

B. Welding Electrodes: Comply with AWS requirements.

C. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

E. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, nonmetallic aggregate grout; recommended by manufacturer for interior use; noncorrosive and nonstaining; mixed with water to consistency suitable for application and a 30-minute working time.

2.5 FABRICATION, GENERAL

A. Provide complete stair assemblies, including metal framing, hangers, struts, railings and guards, clips, brackets, bearing plates, and other components necessary to support and anchor stairs and platforms on supporting structure.

1. Join components by welding unless otherwise indicated.
2. Use connections that maintain structural value of joined pieces.

B. Assemble stairs, railings, and guards in shop to greatest extent possible.

1. Disassemble units only as necessary for shipping and handling limitations.
2. Clearly mark units for reassembly and coordinated installation.

C. Cut, drill, and punch metals cleanly and accurately.

1. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated.
2. Remove sharp or rough areas on exposed surfaces.

D. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

E. Form exposed work with accurate angles and surfaces and straight edges.

F. Weld connections to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Weld exposed corners and seams continuously unless otherwise indicated.
5. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Finish #2 - Completely sanded joint with some undercutting and pinholes okay.

G. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible.

1. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts unless otherwise indicated.
2. Locate joints where least conspicuous.
3. Fabricate joints that will be exposed to weather in a manner to exclude water.
4. Provide weep holes where water may accumulate internally.

2.6 FABRICATION OF STEEL-FRAMED STAIRS

A. NAAMM Stair Standard: Comply with NAAMM AMP 510, "Metal Stairs Manual," for Commercial Class, unless more stringent requirements are indicated.

B. Stair Framing:

1. Fabricate stringers steel channels or steel rectangular tubes.

    a. Stringer Size: As required to comply with "Performance Requirements" Article.
    b. Provide closures for exposed ends of channel and rectangular tube stringers.
    c. Finish: Shop primed.

2. Construct platforms of steel channel or rectangular tube headers and miscellaneous framing members as required to comply with "Performance Requirements" Article.

    a. Provide closures for exposed ends of channel and rectangular tube framing.
    b. Finish: Shop primed.

3. Weld stringers to headers; weld framing members to stringers and headers.
4. Where masonry walls support metal stairs, provide temporary supporting struts designed for erecting steel stair components before installing masonry.

C. Metal Pan Stairs: Form risers, subtread pans, and subplatforms to configurations shown from steel sheet of thickness needed to comply with performance requirements, but not less than 0.067 inch (1.7 mm).

1. Steel Sheet: Uncoated, cold or hot-rolled steel sheet.
2. Attach risers and subtreads to stringers with brackets made of steel angles or bars. Weld brackets to stringers and attach metal pans to brackets by welding, riveting, or bolting.
3. Provide subplatforms of configuration indicated or, if not indicated, the same as subtreads. Weld subplatforms to platform framing.

2.7 FABRICATION OF STAIR RAILINGS AND GUARDS

A. Fabricate railings and guards to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thickness of member, post spacings, wall bracket spacing, and anchorage, but not less than that needed to withstand indicated loads.

1. Rails and Posts: 1-5/8-inch- (41-mm-) minimum diameter top and bottom rails and posts.
2. Picket Infill: 3/4-inch- (19-mm-) round pickets spaced to prohibit the passage of a 4-inch (100-mm) diameter sphere.

B. Welded Connections: Fabricate railings and guards with welded connections.

1. Cope components at connections to provide close fit, or use fittings designed for this purpose.
2. Weld all around at connections, including at fittings.
3. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
4. Obtain fusion without undercut or overlap.
5. Remove flux immediately.
6. Finish welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Finish #2 - Completely sanded joint, some undercutting and pinholes are okay as shown in NAAMM AMP 521.

C. Form changes in direction of railings and guards by bending.

D. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

E. Close exposed ends of railing and guard members with prefabricated end fittings.

F. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated.

1. Close ends of returns unless clearance between end of rail and wall is 1/4 inch (6 mm) or less.

G. Connect posts to stair framing by direct welding unless otherwise indicated.

H. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, end closures, flanges, miscellaneous fittings, and anchors for interconnecting components and for attaching to other work.

1. Furnish inserts and other anchorage devices for connecting to concrete or masonry work.
2. For nongalvanized railings and guards, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves, except galvanize anchors embedded in exterior masonry and concrete construction.
3. Provide type of bracket with predrilled hole for exposed bolt anchorage and that provides 1-1/2-inch (38-mm) clearance from inside face of handrail to finished wall surface.

2.8 FINISHES

A. Finish metal stairs after assembly.

B. Preparation for Shop Priming: Prepare uncoated, ferrous-metal surfaces to comply with SSPC-SP 3, "Power Tool Cleaning."

C. Apply shop primer to uncoated surfaces of metal stair components, except those to be embedded in concrete or masonry unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

D. Stairs and railings shall be finished painted in the field under Section 099123 Interior Painting.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify elevations of floors, bearing surfaces and locations of bearing plates, and other embedments for compliance with requirements.

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

3.2 INSTALLATION OF METAL PAN STAIRS

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal stairs to in-place construction.

1. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal stairs. Set units accurately in location, alignment, and elevation, measured from established lines and levels and free of rack.

C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

D. Fit exposed connections accurately together to form hairline joints.

1. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.
2. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
3. Comply with requirements for welding in "Fabrication, General" Article.

E. Place and finish concrete fill for treads and platforms to comply with Section 033000 Cast-in-Place Concrete.

3.3 INSTALLATION OF RAILINGS AND GUARDS

A. Adjust railing and guard systems before anchoring to ensure matching alignment at abutting joints with tight, hairline joints.

1. Space posts at spacing indicated or, if not indicated, as required by design loads.
2. Plumb posts in each direction, within a tolerance of 1/16 inch in 3 feet (2 mm in 1 m).
3. Align rails and guards so variations from level for horizontal members and variations from parallel with rake of stairs for sloping members do not exceed 1/4 inch in 12 feet (6 mm in 3.5 m).
4. Secure posts, rail ends, and guard ends to building construction as follows:

a. Anchor posts to steel by welding to steel supporting members.
b. Anchor handrail and guard ends to concrete and masonry with steel round flanges welded to rail and guard ends and anchored with post-installed anchors and bolts.

B. Attach handrails to wall with wall brackets.

1. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
2. Secure wall brackets to building construction as required to comply with performance requirements and as follows.

a. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.

b. For hollow masonry anchorage, use toggle bolts.

3.4 REPAIR

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0-mil (0.05-mm) dry film thickness.

END OF SECTION 055113

SECTION 057500 - DECORATIVE FORMED METAL

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. Fabrications made of formed metal sheet, secondary supports, and anchors to structure, including:

a. Factory fabricated column covers.
b. Factory or field fabricated beam covers.

B. Related Requirements:

1. Section 055000 Metal Fabrications for non-decorative metal fabrications.
2. Section 074113 Standing-Seam Metal Roof Panels for metal roof systems.
3. Section 074213 Formed Metal Wall Panels for metal wall cladding systems.
4. Section 076200 Sheet Metal Flashing and Trim for roof drainage systems, flashings and trim.

1.3 SUBMITTALS

A. Product Data - Sheet Metal Material: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.
4. Specimen warranty.

B. Delegated Design Submittal / Shop Drawings: Indicate layout and elevations, dimensions and thickness of panels, connections, details and location of joints, sealants and gaskets, method of anchorage, number of anchors, supports, reinforcement, trim, flashings, and accessories. Shop drawings shall be signed and sealed by qualified architect or engineer actively licensed in the State of Florida.

1. Show actual field measurements on shop drawings.
2. Differentiate between shop and field fabrication.
3. Indicate substrates and adjacent work with which the fabrications must be coordinated.
4. Include large-scale details of anchorages and connecting elements.
5. Provide rational analysis and calculations for formed metal components and anchorages.

C. Verification Samples: For each finish product specified, minimum size 12 inches (305 mm) square, representing actual product in color and texture.

D. Fabricator's Qualification Statement.

E. Installer's Qualification Statement.

F. Maintenance Data: Care of finishes and warranty requirements.

G. Executed Warranty: Submit warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in fabricating products specified in this section.

1. Manufacturer shall have not less than five (5) years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified in this section.

1. Installer shall have minimum three (3) years of documented experience.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.

1. Protect finishes by applying heavy duty removable plastic film during production.
2. Package for protection against transportation damage.
3. Provide markings to identify components consistently with drawings.
4. Exercise care in unloading, storing and installing panels to prevent bending, warping, twisting and surface damage.

B. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

1. Store in well ventilated space out of direct sunlight.
2. Protect from moisture and condensation with tarpaulins or other suitable weather tight covering installed to provide ventilation.
3. Store at a slope to ensure positive drainage of any accumulated water.
4. Do not store in any enclosed space where ambient temperature can exceed 120 degrees F (49 degrees C).
5. Avoid contact with any other materials that might cause staining, denting, or other surface damage.

1.6 WARRANTY

A. Manufacturer's Standard Finish Warranty: Provide manufacturer's written warranty stating that the finish will perform as follows for minimum of 20 years:

1. Chalking: No more than that represented by a No.8 rating based on ASTM D4214.

2. Color Retention: No fading or color change in excess of 5 Hunter color difference units, calculated in accordance with ASTM D2244.
3. Gloss Retention: Minimum of 30 percent gloss retention, when tested in accordance with ASTM D523.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design - Manufacturer: ATAS International Inc.

2.2 FORMED METAL FABRICATIONS - GENERAL

A. Shop Assembly: Preassemble items to greatest extent possible. Minimize field splices and field assembly. Disassemble only as necessary for transportation and handling. Mark items clearly for assembly and installation.

B. Coordination: Match dimensions and attachment of formed metal items to adjacent construction. Produce integrated assemblies. Closely fit joints; align edges and flat surfaces unless indicated otherwise.

C. Forming: Profiles indicated. Maximize lengths. Fold exposed edges to form hem indicated or ease edges to radius indicated with concealed stiffener. Provide flat, flush surfaces without cracking or grain separation at bends.

D. Reinforcement: Increase metal thickness; use concealed stiffeners, backing materials or both. Provide stretcher leveled standard of flatness and stiffness required to maintain flatness and hold adjacent items in flush alignment.

E. Anchors: Straps, plates and anchors as required to support and anchor items to adjacent construction.

F. Supports: Miscellaneous framing, mounting, clips, sleeves, fasteners and accessories required for installation.

G. Welding and Brazing: Weld or braze joints continuously. Grind, fill or dress to produce smooth, flush, exposed surfaces. Do not discolor metal. Grind smooth, polish, and restore damaged finishes to required condition.

H. Performance Requirements:

1. Thermal Movements:

a. Allow for thermal movements in exterior metal fabrications due to temperature changes. Prevent buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
b. Temperature Change Range: 120 degrees F (67 degrees C), ambient; 180 degrees F (100 degrees C), on material surfaces.

2. Corrosion: Prevent galvanic action and other forms of corrosion by isolating metals and other materials from direct contact with incompatible materials.

2.3 FACTORY OR FIELD FABRICATED BEAM COVERS

A. Beam Covers:

1. Form covers from type and thickness of metal indicated for column covers.
2. Conceal fasteners when possible.
3. Drill and tap holes for securing to other surfaces.
4. Provide gaskets where indicated or needed for continuous seal at adjacent surfaces.
5. Miter or cope at corners and reinforce with bent metal plate. Form tight joints.
6. Location: Beam cover shall be installed to conceal exterior steel beam supported by four structural steel columns (the columns receiving column covers) and masonry bearing walls (at ends of beam) at southwest corner of Building No. 11.

B. Contractor's Option: Contractor shall have the option to factory or field fabricate beam cover as specified in this section (by column cover manufacturer) or provide field fabricated brake metal beam cover (by sheet metal fabricator).

2.4 FACTORY FABRICATED COLUMN COVERS

A. Factory Fabricated Column Covers: Factory fabricated and factory finished, sheet metal column covers, mechanically fastened to structural support.

1. Material: Aluminum sheet, ASTM B209 or ASTM B209M alloy 3003 or 5005.
2. Sheet Thickness: 0.125 inch (3.18 mm), minimum.
3. Column Section: Round. 12 inches (304 mm) diameter.
4. Column Height: As indicated.
5. Joint Type: Reveal.
6. Horizontal Reveals: Manufacturer's standard; at top, center, bottom and quarter points as indicated.
7. Fasteners: Self-drilling; ASTM A449 heat treated steel, with manufacturer's standard corrosion resistant coating.
8. Aluminum Finish: Manufacturer's standard factory applied high-performance PVDF coating.
9. Color: As selected by Architect from manufacturer's full range.
10. Location: Four exterior structural steel columns at southwest corner of Building No. 11 as indicated.

2.5 MATERIALS

A. General: Provide sheet metal without pitting, seam marks, roller marks, stains, discolorations, or other imperfections exposed to view on finished units.

B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

C. Aluminum Sheet: ASTM B209 or ASTM B209M, 5005-H32 minimum; alloy and temper recommended by aluminum producer and finisher for use and finish indicated.

D. Galvanized Steel Sheet: ASTM A653/A653M, G90 (Z275) coating.

E. Anchors, Clips and Accessories: Use one of the following:

1. Stainless steel complying with ASTM A276/A276M, ASTM A480/A480M or ASTM A666.

2. Steel complying with ASTM A36/A36M and hot-dipped galvanized to ASTM A153/A153M.
3. Steel complying with ASTM A36/A36M and hot-dipped galvanized to ASTM A123/A123M Coating Grade 35.
4. Interior Locations: Carbon steel; zinc coated in accordance with ASTM B633 or ASTM F1941 Class Fe/Zn 5.
5. Exterior Locations or in Contact with Stainless Steel:

    a. Bolts: Stainless steel; ASTM F593, Group 1 (A1).
    b. Nuts: Stainless steel; ASTM F594.

6. Structural Anchors: Provide anchors where work is indicated to comply with design loads.

    a. Type: Provide chemical or torque-controlled expansion anchors.
    b. Capacity: When tested according to ASTM E488/E488M; four times the load imposed when installed in concrete.

7. Nonstructural Anchors: Provide powder-actuated fasteners where work is not indicated to comply with design loads. Provide size and number required for load, installation, and as recommended by manufacturer, unless indicated otherwise.

F. Fasteners, General: Same basic metal and alloy as formed metal sheet unless indicated otherwise. Do not use metals incompatible with the materials joined.

G. Gaskets: As required to seal joints in decorative formed metal and remain airtight; as recommended in writing by decorative formed metal manufacturer.

1. ASTM D1056, Type 1, Class A, grade as recommended by gasket manufacturer to obtain seal for application indicated.
2. Closed-cell polyurethane foam, adhesive on two sides, release paper protected.

H. Bituminous Coating: Cold-applied asphalt mastic, noncorrosive compound free of asbestos, sulfur, and other deleterious impurities; 15 mil (0.4 mm) dry film thickness per coat.

I. Joint Sealer, Exterior: ASTM C920; elastomeric silicone sealant; of type, grade, class, and use classifications required to seal joints in decorative formed metal and remain weathertight; and as recommended in writing by decorative formed metal manufacturer.

J. Sound Deadening Materials:

1. Mastic: ASTM D1187/D1187M; cold-applied asphalt emulsion.

2.6 FINISHES

A. Finishes, General: Comply with NAAMM AMP 500-06.

1. Complete mechanical finishes before fabrication. After fabrication, finish joints, bends, abrasions and surface blemishes to match sheet.
2. Protect mechanical finishes on exposed surfaces from damage.
3. Apply organic and anodic finishes to formed metal after fabrication unless otherwise indicated.

4. Appearance: Limit variations in appearance of adjacent to one-half the range represented in approved samples. Noticeable variations in the same piece are not acceptable. Install components within the range of approved samples to minimize contrast.

B. Aluminum Finishes:

1. Superior Performing Organic Coatings: AAMA 2605 multiple coat, thermally cured polyvinylidene fluoride system.
2. Color: As selected by Architect from manufacturer's standard range.
3. Touch-Up Materials: As recommended by coating manufacturer for field application.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify dimensions, tolerances, and interfaces with other work.

B. Verify substrate on-site to determine that conditions are acceptable for product installation in accordance with manufacturer's written instructions.

C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

D. Notify Architect in writing of conditions detrimental to proper and timely completion of work. Do not proceed with erection until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protect adjacent work areas and finish surfaces from damage during installation.

B. Deliver anchorage items to be cast into concrete or built into masonry to appropriate installer(s) together with setting templates.

C. Coat concrete and masonry surfaces that will be in contact with metal surfaces with bituminous coating.

3.3 INSTALLATION

A. Locate and place decorative formed sheet metal items level and plumb; align with adjacent construction. Cut, drill and fit as required to install.

B. Do not cut or abrade sheet metal finishes that cannot be completely restored in the field. Return such items to manufacturer or fabricator for required alterations and refinishing or provide new items.

C. Use concealed anchorages where possible. Provide washers where needed on bolts or screws to protect metal surfaces and make weathertight connection.

D. Form tight joints with exposed connections accurately fitted together. Provide reveals and openings for sealants and joint fillers indicated.

E. Install gaskets, joint fillers, insulation, sealants, and flashings as work progresses.

1. Make exterior decorative formed sheet metal items weatherproof.

F. Corrosion Protection: Apply permanent separation materials on concealed surfaces where metals would otherwise be in direct contact with incompatible substrate materials. Prevent corrosion damage to material and finish.

3.4 CLEANING

A. Restore finishes damaged during installation and construction period. Return items that cannot be refinished in the field to manufacturer or fabricator. Refinish entire unit or provide new units.

B. Remove protective film after installation of joint sealers, after cleaning of adjacent materials, and immediately prior to completion of work.

C. Remove temporary coverings and protection of adjacent work areas.

D. Clean installed products in accordance with manufacturer's instructions.

3.5 PROTECTION

A. Protect installed products from damage during construction.

END OF SECTION 057500

SECTION 061000 - ROUGH CARPENTRY

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. Wood blocking, cants, and nailers.
2. Wood sheathing substrates for exterior metal cladding.
3. Plywood backing panels.

B. Related Requirements:

1. Section 072217 Roof Insulation for sheathing integral with roof insulation system.

1.3 DEFINITIONS

A. Boards or Strips: Lumber of less than 2 inches nominal (38 mm actual) size in least dimension.

B. Dimension Lumber: Lumber of 2 inches nominal (38 mm actual) size or greater but less than 5 inches nominal (114 mm actual) size in least dimension.

C. Exposed Framing: Framing not concealed by other construction.

D. Timber: Lumber of 5 inches nominal (114 mm actual) size or greater in least dimension.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.

1.5 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated wood.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Dress lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

D. Application: Treat items indicated on Drawings, and the following:

1. Wood cants, nailers, blocking, fascias, stripping, and similar members in connection with roofing and flashing.
2. Wood blocking, and similar concealed members in contact with masonry or concrete.
3. Wood attached directly to masonry or concrete walls.

2.3 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Cants.
4. Fascias.
5. Miscellaneous items required but not specifically indicated and not otherwise prohibited.

B. Dimension Lumber Items: Standard, Stud, or No. 3 grade lumber of any species.

C. Concealed Boards: 19 percent maximum moisture content and any of the following species and grades:

1. Mixed southern pine or southern pine; No. 3 grade; SPIB.
2. Spruce-pine-fir (south) or spruce-pine-fir; Standard or No. 3 Common grade; NeLMA, NLGA, WCLIB, or WWPA.

D. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

E. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

2.4 PLYWOOD BACKING PANELS

A. Equipment Backing Panels: Plywood, DOC PS 1, Exterior, A-C, in thickness indicated or, if not indicated, not less than 3/4-inch (19-mm) nominal thickness.

2.5 WOOD SHEATHING

A. Plywood Sheathing: APA Rated, DOC PS 1, Exposure 1, sheathing.

1. Nominal Thickness: Not less than 1/2 inch (13 mm).

2.6 FASTENERS

A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M or of Type 304 stainless steel.

B. Nails, Brads, and Staples: ASTM F1667.

C. Screws for Fastening Wood Sheathing to Metal Framing: ASTM C954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.

D. Power-Driven Fasteners: Not allowed on public school sites without written consent of Owner.

E. Post-Installed Anchors: Fastener systems as appropriate for the substrate.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

B. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.

C. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.

D. Install plywood backing panels by fastening to masonry walls; coordinate locations with utilities requiring backing panels.

E. Install shear wall panels to comply with manufacturer's written instructions.

F. Provide blocking as indicated and as required to support facing materials, fixtures, specialty items, and trim.

G. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

H. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

1. Use inorganic boron for items that are continuously protected from liquid water.
2. Use copper naphthenate for items not continuously protected from liquid water.

I. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

J. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code (IBC).
2. ICC-ES evaluation report for fastener.

K. Use common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight

connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 INSTALLATION OF WOOD BLOCKING AND NAILERS

A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

3.3 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet enough that moisture content exceeds that specified, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000

SECTION 064116 - PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS

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. Plastic-laminate-clad architectural cabinets.
2. Cabinet hardware and accessories.
3. Wood furring, blocking, shims, and hanging strips for installing plastic-laminate-clad architectural cabinets that are not concealed within other construction.

B. Related Requirements:

1. Section 061000 Rough Carpentry for wood furring, blocking, shims, and hanging strips required for installing cabinets that are concealed within other construction before cabinet installation.
2. Section 123550 Laboratory Casework and Work Surfaces for wood science lab / science demonstration casework and related work surfaces and accessories for installation in Intermediate / Middle Science Lab, including support spaces and Intermediate / Middle Science Demonstration, including support spaces.
3. Section 123623 Plastic-Laminate-Clad Countertops.

1.3 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to support loads imposed by installed and fully loaded cabinets.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings:

1. Include plans, elevations, sections, and attachment details.

2. Show large-scale details.
3. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
4. Show locations and sizes of cutouts and holes for items installed in plastic-laminate architectural cabinets.
5. Apply AWI Quality Certification Program label to Shop Drawings.

C. Samples: For the following:

1. Plastic Laminates: 12 by 12 inches (300 by 300 mm), for each type, color, pattern, and surface finish required.

    a. Provide one sample applied to core material with specified edge material applied to one edge.

2. Thermoset Decorative Panels: 12 by 12 inches (300 by 300 mm), for each color, pattern, and surface finish required.

    a. Provide sample with specified edge material applied to at least one edge.

3. Exposed Cabinet Hardware and Accessories: One full-size unit for each type and finish.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer.

B. Product Certificates: For the following:

1. Composite wood products.
2. Thermoset decorative panels.
3. High-pressure decorative laminate.
4. Adhesives.

C. Quality Standard Compliance Certificates: AWI Quality Certification Program.

1.7 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

1. Manufacturer's Certification: Licensed participant in AWI's Quality Certification Program.

B. Installer Qualifications: Licensed participant in AWI's Quality Certification Program.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver cabinets until painting and similar finish operations that might damage architectural cabinets have been completed in installation areas. Store cabinets in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.9 FIELD CONDITIONS

A. Environmental Limitations without Humidity Control: Do not deliver or install cabinets until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.

B. Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed/concealed by construction, and indicate measurements on Shop Drawings.

C. Established Dimensions: Where cabinets are indicated to fit to other construction, establish dimensions for areas where cabinets are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.1 PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS

A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards – Edition 2 (2014) for definitions, grades of cabinets indicated for construction, finishes, installation, and other requirements.

1. Provide certificates from AWI certification program indicating that woodwork and installation complies with requirements of grades specified.

2. Where the Contract Documents contain requirements that are more stringent than the referenced quality standard. Comply with requirements of Contract Documents in addition to those of the referenced quality standard.

B. Architectural Woodwork Standards Grade: Custom.

C. Type of Construction: Frameless.

D. Door and Drawer-Front Style: Reveal overlay.

1. Reveal Dimension: 1/2 inch (13 mm).

E. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or if not indicated, as required by quality standard.

F. Laminate Cladding for Exposed Exterior and Exposed Interior Surfaces:

1. Horizontal Surfaces: Grade HGS or Grade VGS. Grade VGS not for use on countertops.
2. Vertical Surfaces: Grade HGS or Grade VGS.
3. Edges – Cabinet Bodies: Grade HGS or Grade VGS, matching laminate on cabinet faces in color, pattern, and finish.
4. Edges – Door and Drawer Fronts: PVC edge banding, 1/8-inch (3.0 mm) thick, matching laminate in color, pattern, and finish.
5. Edges – Open Shelf Edges: Grade HGS, Grade VGS, or PVC edge banding, 1/8-inch (3.0 mm) thick, matching laminate in color, pattern, and finish.
6. Pattern Direction: Vertically for drawer fronts, doors, and fixed panels unless otherwise indicated.

G. Materials for Semi-exposed Surfaces:

1. In addition to traditional surface categories indicated in AWI Architectural Woodwork Standards, Section 10 “Casework”, open shelving units in Material Storage rooms shall also be considered semi-exposed surfaces.
2. Where thermoset decorative panels are indicated for semi-exposed surfaces it shall be acceptable to substitute high-pressure decorative laminate panels whether or not specifically indicated as an option.
3. Surfaces Other Than Drawer Bodies: High-pressure decorative laminate, NEMA LD 3, Grade VGS or high-pressure decorative laminate, NEMA LD 3, Grade CLS or thermoset decorative panels.
    a. Edges of Plastic-Laminate Shelves: PVC edge banding, 1/8-inch (3.0 mm) thick, matching laminate in color, pattern, and finish.
    b. Edges of Thermoset Decorative Panel Shelves: PVC or polyester edge banding.
    c. For semi-exposed backs of panels with exposed plastic-laminate surfaces, provide surface of high-pressure decorative laminate, NEMA LD 3, Grade VGS or Grade CLS.
4. Drawer Sides and Backs: Thermoset decorative panels with PVC or polyester edge banding.
5. Drawer Bottoms: Thermoset decorative panels.

H. Concealed Backs of Panels with Exposed Plastic-Laminate Surfaces: High-pressure decorative laminate, NEMA LD 3, Grade BKL.

I. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.

1. Join subfronts, backs, and sides by doweling and screwing.

J. Manufacturers, Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:

1. Basis of Design – High Pressure Laminate: Wilsonart.
2. Basis of Design – Thermoset Decorative Panel: Fabricator’s Option.
3. Basis of Design – PVC Edge Banding (3.0 mm) : Charter Industries.

4. Basis of Design – Colors, Patterns and Finishes: Architect to select colors, patterns and finishes from laminate, thermoset panel and edging manufacturer's full range in the following categories:

    a. Solid colors, gloss and matte finish.
    b. Solid colors with core same color as surface, gloss and matte finish.
    c. Wood grains, gloss and matte finish.
    d. Patterns, gloss and matte finish.

2.2 WOOD MATERIALS

A. Composite Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.

1. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade 130 or better.
2. Particleboard (Medium Density): ANSI A208.1, Grade M-2 or better.
3. Softwood Plywood: DOC PS 1.
4. Thermoset Decorative Panels: Particleboard or MDF finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD 3, Grade VGL, for Test Methods 3.3, 3.4, 3.6, 3.8, and 3.10.

2.3 CABINET HARDWARE AND ACCESSORIES

A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets.

B. Butt Hinges: 2-3/4-inch (70-mm), five-knuckle steel hinges made from 0.095-inch- (2.4-mm-) thick metal, and as follows:

1. Semi-concealed Hinges for Overlay Doors: ANSI/BHMA A156.9, B01521.
2. Basis of Design: “374” by Rockford Process Control.
3. Basis of Design – Finish: Satin Chrome.

C. Wire Pulls: Back mounted, solid metal, nominally 4 inches (100 mm) long, 5/16 inch (8 mm) in diameter.

1. Basis of Design: “116.39.455” by Hafele.
2. Basis of Design – Finish: Chrome Plated Matte.

D. Catches: Magnetic catches, ANSI/BHMA A156.9, B03141.

1. Basis of Design: “SP41” by Stanley.
2. Basis of Design – Finish: Mill Aluminum.

E. Counter Brackets: ANSI/BHMA A156.9; 18 inches (457 mm) by 24 inches (609 mm), 11 gage steel.

1. Basis of Design: “Standard Mount” by Gambas Company, Inc.
2. Basis of Design – Finish: Black powder coat.

F. Shelf Rests: ANSI/BHMA A156.9, B04013; two-pin plastic or polycarbonate with shelf hold-down clip.

1. Basis of Design: “Locking Twin Pin Shelf Support” by Toddco Manufacturing.

2. Basis of Design – Finish: Clear.

G. Drawer Slides: ANSI/BHMA A156.9.

1. Grade 1: Side mounted; full-extension type; extending under bottom edge of drawer.

   a. Material: Epoxy-coated steel with polymer rollers.
   b. Basis of Design: "430E" by Blum.
   c. Basis of Design – Finish: Cream.

2. Grade 1HD-100: Side mounted; full-extension type; zinc-plated-steel ball-bearing slides.

   a. Basis of Design: "8400" by Knape & Vogt.
   b. Basis of Design – Finish: Anochrome or white.

3. For drawers not more than 3 inches (75 mm) high and not more than 24 inches (600 mm) wide, provide Grade 1.
4. For drawers more than 3 inches (75 mm) high, but not more than 6 inches (150 mm) high and not more than 24 inches (600 mm) wide, provide Grade 1 or Grade 1HD-100.
5. For hanging file drawers, flat file drawers and drawers more than 6 inches (150 mm) high or more than 24 inches (600 mm) wide, provide Grade 1HD-100.

H. Door Locks: ANSI/BHMA A156.11, E07121.

1. All doors shall be lockable and keyed alike within each individual classroom, breakroom, lab or support space. Each classroom, lab, demonstration room, teacher planning room or support space shall be uniquely keyed.

I. Drawer Locks: ANSI/BHMA A156.11, E07041.

1. All drawers shall be lockable and keyed alike within each individual classroom, breakroom, lab or support space. Each classroom, lab, demonstration room, teacher planning or support space shall be uniquely keyed.

J. Door and Drawer Silencers: ANSI/BHMA A156.16, L03011.

K. Grommets for Cable Passage: Circular, molded-plastic grommets and matching plastic caps with slot for wire passage.

1. Basis of Design: "EDP3" by Doug Mockett and Company, Inc.
2. Basis of Design – Outside Diameter: 2-1/2 inches (63 mm).
3. Basis of Design – Color: Brown or Black as selected by Architect.

L. Wardrobe Hooks: ANSI/BHMA A156.9. Cast brass, single hook, 1-11/16 inch (43 mm) projection.

1. Basis of Design: "581" by Ives.
2. Basis of Design – Finish: Satin Chrome (626).

M. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with ANSI/BHMA A156.18 for ANSI/BHMA finish number indicated.

1. Satin Chromium Plated: ANSI/BHMA 626 for brass or bronze base; ANSI/BHMA 652 for steel base.

N. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in ANSI/BHMA A156.9.

2.4 MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content. Refer to Section 061000 Rough Carpentry for preservative treated wood blocking to be used in direct contact with concrete (casework bases, etc.).

B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

C. Adhesive for Bonding Plastic Laminate: As selected by manufacturer to comply with requirements.

1. Adhesive for Bonding Edges: Hot-melt adhesive or adhesive specified above for faces.

2.5 FABRICATION

A. Fabricate architectural cabinets to dimensions, profiles, and details indicated.

B. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

C. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

D. All adjustable shelving shall be 1 inch (25 mm) thick minimum.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition cabinets to humidity conditions in installation areas for not less than 72 hours.

3.2 INSTALLATION

A. Architectural Woodwork Standards Grade: Install cabinets to comply with quality standard grade of item to be installed.

B. Assemble cabinets and complete fabrication at Project site to extent that it was not completed in the shop.

C. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with wafer-head cabinet installation screws.

D. Install cabinets level, plumb, and true in line to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm) using concealed shims.

1. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
2. Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
3. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches (400 mm) o.c.

3.3 ADJUSTING AND CLEANING

A. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects. Where not possible to repair, replace architectural cabinets. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean cabinets on exposed and semi-exposed surfaces.

END OF SECTION 064116

SECTION 071416 - COLD FLUID-APPLIED WATERPROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Polyurethane waterproofing for masonry cavity walls and masonry retaining walls. This product may be referred to as “Bituminous Dampproofing” or “Dampproofing” on the Drawings.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings:

1. Show locations and extent of waterproofing.
2. Include details for substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.

1.4 INFORMATIONAL SUBMITTALS

A. Sample warranty.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by waterproofing manufacturer.

1.6 WARRANTY

A. Manufacturer's Special Warranty: Manufacturer agrees to repair or replace waterproofing that fails in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 POLYURETHANE WATERPROOFING

A. Single-Component, Modified Polyurethane Waterproofing:

1. Basis of Design: “MasterSeal 615” by BASF.

2.2 AUXILIARY MATERIALS

A. Primer: Manufacturer's standard primer, sealer, or surface conditioner; factory-formulated.

B. Sheet Flashing: 50-mil- (1.3-mm-) minimum, non-staining, uncured sheet neoprene.

1. Adhesive: Manufacturer's recommended contact adhesive.

C. Joint Reinforcing Strip: Manufacturer's recommended fiberglass mesh or polyester fabric.

D. Joint Sealant: Multicomponent polyurethane sealant, compatible with waterproofing; and as recommended by manufacturer for substrate and joint conditions.

1. Backer Rod: Closed-cell polyethylene foam.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrates for waterproofing application.

B. Mask off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.

C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, acid residues, and other penetrating contaminants or film-forming coatings from concrete.

D. Remove fins, ridges, and other projections, and fill honeycomb, aggregate pockets, holes, and other voids.

E. Prepare surfaces at terminations and penetrations through waterproofing and at expansion joints, drains, sleeves, and corners according to waterproofing manufacturer's written instructions.

F. Apply waterproofing in two separate applications, and embed a joint reinforcing strip in the first preparation coat when recommended by waterproofing manufacturer.

G. Prepare, treat, rout, and fill joints and cracks in substrate according to waterproofing manufacturer's written instructions. Before coating surfaces, remove dust and dirt from joints and cracks according to ASTM D4258.

3.2 INSTALLATION OF WATERPROOFING

A. Apply waterproofing according to manufacturer's written instructions and to recommendations in ASTM C898/C898M and ASTM C1471/C1471M.

B. Unreinforced Waterproofing Applications.

1. Apply two or more coats of waterproofing to obtain a seamless membrane free of entrapped gases and pinholes, with minimum installed dry film thicknesses of 60 mils (1.5 mm) for cavity walls and 90 mils (2.25 mm) for retaining walls.

3.3 PROTECTION

A. Protect waterproofing from damage and wear during remainder of construction period.

B. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings.

END OF SECTION 071416

SECTION 072100 - THERMAL INSULATION

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. Polyisocyanurate foam-plastic board insulation for installation in masonry cavity walls and in cavities walls between metal wall panel veneers and structural masonry walls.

B. Related Requirements:

1. Section 072217 Roof Insulation for rigid insulation installed directly over roof decks.
2. Section 072119 Foamed-in-Place Insulation for spray-applied polyurethane foam insulation.
3. Section 092900 Gypsum Board for sound attenuation blanket used as acoustic insulation.

1.3 ACTION SUBMITTALS

A. Product Data: For the following:

1. Polyisocyanurate foam-plastic board insulation.

1.4 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each product, for tests performed by a qualified testing agency.

B. Research Reports: For foam-plastic insulation, from ICC-ES.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

B. Protect foam-plastic board insulation as follows:

1. Do not expose to sunlight except to necessary extent for period of installation and concealment.

2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project site until just before installation time.
3. Quickly complete installation and concealment of foam-plastic board insulation in each area of construction.

PART 2 - PRODUCTS

2.1 POLYISOCYANURATE FOAM-PLASTIC BOARD INSULATION

A. Polyisocyanurate Board Insulation, Foil Faced: ASTM C1289, foil faced, Type I, Class 1 or 2.

1. Basis of Design: “Thermasheath” by Rmax.
2. Design Thickness: 3 inches unless otherwise indicated.
3. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
4. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches (305 mm) and wider in width.

2.2 ACCESSORIES

A. Insulation for Miscellaneous Voids:

1. Glass-Fiber Insulation: ASTM C764, Type II, loose fill; with maximum flame-spread and smoke-developed indexes of 5, per ASTM E84.
2. Spray Polyurethane Foam Insulation: Refer to Section 072119 Foamed-in-Place Insulation.

B. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation or vapor retarders, or that interfere with insulation attachment.

3.2 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Install insulation with manufacturer's R-value label exposed after insulation is installed.

D. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

E. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

3.3 INSTALLATION OF CAVITY-WALL INSULATION

A. Foam-Plastic Board Insulation: Install pads of adhesive spaced approximately 24 inches (610 mm) o.c. both ways on inside face and as recommended by manufacturer.

1. Fit courses of insulation between wall ties, veneer support systems and other obstructions, with edges butted tightly in both directions, and with faces flush.
2. Press units firmly against inside substrates.
3. Supplement adhesive attachment of insulation by securing boards with two-piece wall ties designed for this purpose and specified in Section 042000 Unit Masonry.

3.4 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes.

B. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 072100

SECTION 072119 - FOAMED-IN-PLACE INSULATION

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. Open-cell spray polyurethane foam for sealing voids between tops of walls and roof structural members and in similar voids in exterior building envelope.

B. Related Requirements:

1. Section 072100 Thermal Insulation for cavity wall insulation.
2. Section 072217 Roof Insulation for insulation used for roofing applications.
3. Section 092900 Gypsum Board for sound attenuation blanket used as acoustic insulation.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

C. Evaluation Reports: For spray-applied polyurethane foam-plastic insulation, from ICC-ES.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

PART 2 - PRODUCTS

2.1 OPEN-CELL SPRAY POLYURETHANE FOAM

A. Open-Cell Spray Polyurethane Foam: Spray-applied polyurethane foam using water as a blowing agent. Minimum density of 0.4 lb/cu. ft. (6.4 kg/cu. m) and minimum aged R-value at 1-inch (25.4-mm) thickness of 3.4 deg F x h x sq. ft./Btu at 75 deg F (24 K x sq. m/W at 24 deg C).

1. Basis of Design – Spray Foam: “Classic Ultra” by Icynene.
2. Basis of Design - Thermal / Ignition Barrier: “DC-315” by International Fireproof Technology, Inc.
3. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
    a. Flame-Spread Index: 25 or less.
    b. Smoke-Developed Index: 450 or less.
4. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

2.2 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by insulation manufacturer where required for adhesion of insulation to substrates.

B. Thermal / Ignition Barrier: Provide compatible material installed per both foam and barrier manufacturer’s requirements where required for a fully code compliant installation.

PART 3 - EXECUTION

3.1 PREPARATION

A. Verify that substrates are clean, dry, and free of substances that are harmful to insulation.

B. Priming: Prime substrates where recommended by insulation manufacturer. Apply primer to comply with insulation manufacturer's written instructions. Confine primers to areas to be insulated; do not allow spillage or migration onto adjoining surfaces.

3.2 INSTALLATION

A. Comply with insulation manufacturer's written instructions applicable to products and applications.

B. Spray insulation to envelop entire area to be insulated and fill voids.

C. Apply in multiple passes to not exceed maximum thicknesses recommended by manufacturer. Do not spray into rising foam.

D. Miscellaneous Voids: Apply according to manufacturer's written instructions.

3.3 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes.

END OF SECTION 072119

SECTION 072217 – ROOF INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Roof insulation.

B. Related Requirements:

1. Section 073113 Asphalt Shingles for shingle roof system, underlayment and accessories.
2. Section 074113 Standing-Seam Metal Roof Panels for metal roof system, underlayment and accessories.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Include plans, sections, details, and attachments to other work, including the following:

1. Layout and thickness of insulation.
2. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.

1.4 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For roof insulation, tests performed by a qualified testing agency, indicating compliance with specified requirements.

B. Florida Product Approval for roof insulation.

C. Sample warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance data.

B. Statement of Compliance: Contractor shall provide to Owner written statement indicating finished roof system complies with Contract Documents, approved Submittals, manufacturer's requirements and Florida Building Code – Building (Seventh Edition) Section 453.12.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roof insulation manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

1.7 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Wind Uplift Resistance: Design roofing system components to resist the wind uplift pressures indicated on the Drawings when tested according to FM Approvals 4474, UL 580, or UL 1897.

B. Exterior Fire-Test Exposure: ASTM E108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency.

2.2 ROOF INSULATION

A. Polyisocyanurate Board Insulation: ASTM C1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.

1. Basis of Design: "ACFoam-II" by Atlas Roofing Corporation.
2. Basis of Design Florida Product Approval Number: FL17989.
3. Use: Base layer over structural metal deck at areas to receive shingle and metal roof systems.
4. Size: 48 by 96 inches (1219 mm by 2438 mm).
5. Thickness:

a. Base Layer: 1-1/2 inches (38 mm).
b. Upper Layer: As indicated for Composite and Vented Polyisocyanurate Board Insulation.

B. Composite Polyisocyanurate Board Insulation: ASTM C1289, Type V with factory applied nailable surface.

1. Basis of Design: "ACFoam Nail Base" by Atlas Roofing Corporation.

2. Basis of Design Florida Product Approval Number: FL17989.
3. Facer Type V: CDX grade plywood facer, 19/32 inch (15 mm) thick.
4. Size: 48 by 96 inches (1219 mm by 2438 mm).
5. Use: Upper layer over polyisocyanurate base layer at areas to receive metal roof systems.
6. Thickness: 1-1/2 inches (38 mm) overall including nailable surface.

C. Vented Composite Polyisocyanurate Board Insulation: ASTM C1289, with factory-applied facing board over spacers to create 1 inch (25 mm) nominal ventilation pathways on one major surface, as indicated below by type, and felt or glass-fiber mat facer on the other surface.

1. Basis of Design: "ACFoam-Crossvent" by Atlas Roofing Corporation.
2. Basis of Design Florida Product Approval Number: FL17989.
3. Use: Upper layer over polyisocyanurate base layer at areas to receive shingle roof systems.
4. Facer Type V: CDX grade plywood facer, 19/32 inch (15 mm) thick.
5. Size: 48 by 96 inches (1219 by 2438 mm).
6. Thickness: nominal 3-1/8 inches (79 mm) overall including vented area and nailable surface.

2.3 INSULATION ACCESSORIES

A. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.

B. Wood Nailer Strips: Comply with requirements in Section 061000 Rough Carpentry.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

3.2 INSTALLATION OF INSULATION

A. Coordinate installing roofing system components, so insulation is not exposed to precipitation or left exposed at the end of the workday.

B. Comply with roofing system and insulation manufacturer's written instructions for installing roof insulation.

C. Installation Over Metal Decking:

1. Install base layer of insulation with end joints staggered not less than 12 inches (300 mm) in adjacent rows and with long joints continuous at right angle to flutes of decking.

a. Locate end joints over crests of decking.

b. Where installing composite and noncomposite insulation in two or more layers, install noncomposite board insulation for bottom layer and intermediate layers, if applicable, and install composite board insulation for top layer.
c. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
d. Make joints between adjacent insulation boards not more than 1/4 inch (6 mm) in width.
e. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
f. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
g. Mechanically attach base layer of insulation using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to metal decks.

1) Fasten insulation to resist specified uplift pressure at corners, perimeter, and field of roof.

2. Install upper layers of insulation, with joints of each layer offset not less than 12 inches (300 mm) from previous layer of insulation.

a. Install with long joints continuous and with end joints staggered not less than 12 inches (300 mm) in adjacent rows.
b. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
c. Make joints between adjacent insulation boards not more than 1/4 inch (6 mm) in width.
d. Trim insulation, so that water flow is unrestricted.
e. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
f. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.

3.3 PROTECTING AND CLEANING

A. Protect roofing system from damage and wear during remainder of construction period.

1. When remaining construction does not affect or endanger roofing, inspect roofing system for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 072217

SECTION 073113 - ASPHALT SHINGLES

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. Glass-fiber-reinforced asphalt shingles.
2. Underlayment materials.
3. Ridge vents.
4. Metal flashing and trim.

B. Related Requirements:

1. Section 072217 Roof Insulation for insulation installed as part of the Asphalt Shingle assemblies.
2. Section 076200 Sheet Metal Flashing and Trim for flashing and trim detailed requirements.

1.3 DEFINITIONS

A. Roofing Terminology: See ASTM D1079 for definitions of terms related to roofing Work in this Section.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

A. Product Data: For the following:

1. Asphalt shingles.
2. Underlayment materials.
3. Ridge vents.
4. Asphalt roofing cement.
5. Elastomeric flashing sealant.

B. Shop Drawings: For metal flashing and trim.

C. Samples for Initial Selection:

1. For each type of asphalt shingle indicated.
2. For each type of accessory involving color selection.

D. Samples for Verification: For the following products, in sizes indicated:

1. Asphalt Shingles: Full size.
2. Ridge and Hip Cap Shingles: Full size.
3. Ridge Vent: 12 inch (305 mm) long Sample.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For each type of asphalt shingle and underlayment product indicated, for tests performed by a qualified testing agency.

C. Research Reports: For synthetic underlayment, from an agency acceptable to authorities having jurisdiction, indicating that product is suitable for intended use under applicable building codes.

D. Florida Product Approval for roof system and components.

E. Sample Warranty: For manufacturer's materials warranty.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For asphalt shingles to include in maintenance manuals.

B. Materials warranties.

C. Roofing Installer's warranty.

D. Statement of Compliance. Contractor shall provide to Owner written statement indicating finished roof system complies with Contract Documents, approved Submittals, manufacturer’s requirements and Florida Building Code – Building (Seventh Edition) Section 453.12.

1.8 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Asphalt Shingles: 100 sq. ft. (9.3 sq. m) of each type and in each color and blend, in unbroken bundles. Contractor to deliver bundles to Owner designated storage facility in or near Yulee, Florida.

1.9 QUALITY ASSURANCE

A. Installer Qualifications: An authorized installer who is trained and approved by manufacturer.

B. Manufacturer's Inspection: The completed roof system installation shall be inspected by the manufacturer's representative and Owner's representative between ten (10) and twelve (12) months from Substantial Completion per Florida Building Code – Building (Seventh Edition) Section 453.12.4.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Store roofing materials in a dry, well-ventilated location protected from weather, sunlight, and moisture in accordance with manufacturer's written instructions.

B. Store underlayment rolls on end, on pallets or other raised surfaces. Do not double-stack rolls.

C. Protect unused roofing materials from weather, sunlight, and moisture when left overnight or when roofing Work is not in progress.

D. Handle, store, and place roofing materials in a manner to prevent damage to roof deck or structural supporting members.

1.11 FIELD CONDITIONS

A. Environmental Limitations: Proceed with installation only when existing and forecasted weather conditions permit product installation and related Work to be performed in accordance with manufacturer's written instructions and warranty requirements.

1. Install self-adhering, polymer-modified bitumen sheet underlayment within the range of ambient and substrate temperatures recommended in writing by manufacturer.

1.12 WARRANTY

A. Materials Warranty: Manufacturer agrees to repair or replace asphalt shingles that fail within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Manufacturing defects.
b. Wind damage.

2. Materials Warranty Period: 25 years from date of Substantial Completion, prorated, with first 5 years non-prorated.
3. Wind-Speed Warranty Period: Asphalt shingles will resist blow-off or damage caused by wind speeds of up to those indicated on Drawings for 15 years from date of Substantial Completion.
4. Algae-Resistance Warranty Period: Asphalt shingles will not discolor for 10 years from date of Substantial Completion.

B. Roofing Installer's Warranty: On warranty form at end of this Section, signed by Installer, in which Installer agrees to repair or replace components of asphalt shingle roofing that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain each type of product from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Exterior Fire-Test Exposure: Provide asphalt shingles and related roofing materials identical to those of assemblies tested for Class A fire resistance in accordance with ASTM E108 or UL 790 by Underwriters Laboratories or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing agency.

B. Wind Resistance: Provide asphalt shingles that comply with requirements of ASTM D3161/D3161M, Class F, and with ASTM D7158/D7158M, Class H.

C. Energy Performance, ENERGY STAR: Provide asphalt shingles that are listed on the DOE's "ENERGY STAR Roof Product List" for steep-slope roof products.

2.3 GLASS-FIBER-REINFORCED ASPHALT SHINGLES

A. Three-Tab-Strip Asphalt Shingles: ASTM D3462/D3462M; glass-fiber reinforced, mineral-granule surfaced, and self-sealing with tabs regularly spaced.

1. Basis of Design: “TruDefinition Duration” by Owens Corning.
2. Basis of Design Color: “Shasta White”.
3. Basis of Design Florida Product Approval Number: FL10674.1.
4. Butt Edge: Straight cut.
5. Size: 13-1/4 inches (337 mm) by 39-3/8 inches (1000 mm).
6. Algae Resistance: Granules resist algae discoloration.

B. Hip and Ridge Shingles: Manufacturer's standard units to match asphalt shingles or site-fabricated units cut from asphalt shingle strips. Trim each side of lapped portion of unit to taper approximately 1 inch (25 mm).

2.4 UNDERLAYMENT MATERIALS

A. Self-Adhering, Polymer-Modified Bitumen Sheet: ASTM D1970/D1970M, minimum 55 mil (1.4 mm) thick sheet; glass-fiber-mat-reinforced, polymer-modified asphalt; with slip-resistant top surface and release backing; cold applied.

1. Basis of Design: “WIP 100” by Carlisle.
2. Basis of Design Florida Product Approval Number: FL 6785.

2.5 RIDGE VENTS

A. Rigid Ridge Vent: Manufacturer's standard, rigid-section, high-density, UV-stabilized plastic ridge vent for use under ridge shingles.

1. Basis of Design: "Vent Sure Roll Rigid Vent" by Owens Corning.
2. Basis of Design Florida Product Approval Number: FL 10758.3
3. Minimum Net Free Area: 12.5 square inches per linear foot.
4. Width: 11-1/4 inches (285 mm).
5. Thickness: 5/8 inches (16 mm) nominal.
6. Features:

    a. Nonwoven geotextile filter strips.
    b. External deflector baffles.

2.6 ACCESSORIES

A. Asphalt Roofing Cement: ASTM D4586/D4586M Type II, asbestos free.

B. Elastomeric Flashing Sealant: ASTM C920, Type S, Grade NS, one-part, non-sag, elastomeric polymer sealant; of class and use classifications required to seal joints and remain watertight; recommended in writing by manufacturer for installation of flashing systems.

C. Roofing Nails: ASTM F1667, aluminum, stainless steel, copper, or hot-dip galvanized-steel wire shingle nails, minimum 0.120 inch (3 mm) diameter, sharp-pointed, with a 3/8 inch to 7/16 inch (10 to 11 mm) diameter flat head and of sufficient length to penetrate 3/4 inch (19 mm) into solid wood decking or extend at least 1/8 inch (3 mm) through sheathing less than 3/4 inch (19 mm) thick.

1. Where nails are in contact with metal flashing, use nails made from same metal as flashing.

D. Underlayment Nails: Aluminum, stainless steel, or hot-dip galvanized-steel wire nails with low-profile metal or plastic caps, 1 inch (25 mm) minimum diameter.

2.7 METAL FLASHING AND TRIM

A. Comply with requirements in Section 076200 Sheet Metal Flashing and Trim.

1. Sheet Metal: Anodized aluminum.

B. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of the item unless otherwise specified in this Section or indicated on Drawings.

1. Vent-Pipe Flashings: ASTM B749, Type L51121, at least 1/16 inch (1.6 mm) thick. Provide lead sleeve sized to slip over and turn down into pipe, soldered to skirt at slope of roof, and extending at least 4 inches (102 mm) from pipe onto roof.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. Examine roof sheathing to verify that sheathing joints are supported by framing and blocking or metal clips and that installation is within flatness tolerances.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and completely anchored and that provisions have been made for flashings and penetrations through asphalt shingles.
3. Verify that vent stacks and other penetrations through roofing are installed and securely fastened.

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 OF UNDERLAYMENT MATERIALS

A. Comply with asphalt shingle and underlayment manufacturers' written installation instructions and with recommendations in NRCA's "The NRCA Roofing Manual: Steep-Slope Roof Systems" applicable to products and applications indicated unless more stringent requirements are specified in this Section or indicated on Drawings.

B. Self-Adhering, Polymer-Modified Bitumen Sheet: Install, wrinkle free, over insulation on entire roof area to be covered with shingle roof system.

1. Comply with low-temperature installation restrictions of underlayment manufacturer.
2. Install lapped in direction that sheds water.

a. Lap sides not less than 4 inches (102 mm).
b. Lap ends not less than 6 inches (152 mm), staggered 24 inches (610 mm) between succeeding courses.
c. Roll laps with roller.

3. Prime metal surfaces to receive self-adhering sheet.
4. Valleys: Line valleys with self-adhering, polymer-modified bitumen sheet from lowest to highest point 18 inches (457 mm) on each side of valley centerline. Lap roof underlayment 6 inches (152 mm) minimum over edges of valley lining.
5. Cover underlayment within seven days.

3.3 INSTALLATION OF METAL FLASHING AND TRIM

A. Install metal flashings and trim to comply with requirements in Section 076200 Sheet Metal Flashing and Trim.

1. Bed flanges of metal flashings using asphalt roofing cement or elastomeric flashing sealant.

B. Rake Drip Edges: Install over underlayment materials and fasten to roof deck.

C. Eave Drip Edges: Install below underlayment materials and fasten to roof deck.

D. Pipe Flashings: Form flashing around pipe penetrations and asphalt shingles. Fasten and seal to asphalt shingles as recommended by manufacturer.

3.4 INSTALLATION OF ASPHALT SHINGLES

A. Install asphalt shingles in accordance with manufacturer's written instructions and recommendations in NRCA's "NRCA Guidelines for Asphalt Shingle Roof Systems."

B. Install starter strip along lowest roof edge, consisting of an asphalt shingle strip with tabs removed at least 7 inches (178 mm) wide with self-sealing strip face up at roof edge.

1. Extend asphalt shingles 1/2 inch (13 mm) over fasciae at eaves and rakes.
2. Install starter strip along rake edge.

C. Install first and remaining courses of three-tab-strip asphalt shingles stair-stepping diagonally across roof deck with half-tab or manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.

D. Fasten asphalt shingle strips with a minimum of six roofing nails, but not less than the number indicated in manufacturer's written instructions for roof slope and design wind speed indicated on Drawings and for warranty requirements specified in this Section.

1. Locate fasteners in accordance with manufacturer's written instructions.
2. Comply with Florida Building Code – Building (Seventh Edition) Sections 1504.1.1 and 1507.2.7 for Asphalt Shingle installation and fastening.
3. When ambient temperature during installation is below 50 deg F (10 deg C), hand seal self-sealing asphalt shingles by applying asphalt roofing cement spots between course overlaps after nailing the upper course.

E. Ridge Vents: Install continuous ridge vents over asphalt shingles in accordance with manufacturer's written instructions. Fasten with roofing nails of sufficient length to penetrate sheathing.

F. Closed-Cut Valleys: Extend asphalt shingle strips from one side of valley 12 inches (305 mm) beyond center of valley.

1. Use one-piece shingle strips without joints in valleys.
2. Fasten with extra nail in upper end of shingle. Install asphalt shingle courses from other side of valley and cut back to a straight line 2 inches (51 mm) short of valley centerline.
3. Trim upper concealed corners of cut-back shingle strips.
4. Do not nail asphalt shingles within 6 inches (152 mm) of valley center.
5. Set trimmed, concealed-corner asphalt shingles in a 3 inch (76 mm) wide bed of asphalt roofing cement.

G. Hip and Ridge Shingles: Maintain same exposure of cap shingles as roofing-shingle exposure. Lap cap shingles at ridges to shed water away from direction of prevailing winds.

1. Fasten with roofing nails of sufficient length to penetrate sheathing.
2. Fasten ridge cap asphalt shingles to cover ridge vent without obstructing airflow.

3.5 ROOFING INSTALLER'S WARRANTY

A. WHEREAS **<Insert name>** of **<Insert address>**, herein called the "Roofing Installer," has performed roofing and associated work ("the work") on the following project:

1. Owner: Nassau County School District.
2. Owner Address: 1701 Atlantic Avenue, Fernandina Beach, Florida 32034.
3. Building Name/Type: Yulee Middle School.
4. Building Address: 85439 Miner Road, Yulee, Florida 32097.
5. Area of the Work: Building No. 11.
6. Acceptance Date: **<Insert date>**.
7. Warranty Period: Two (2) Years from Substantial Completion.
8. Expiration Date: **<Insert date>**.

B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant the work against leaks and faulty or defective materials and workmanship for designated Warranty Period,

C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that, during Warranty Period, Roofing Installer will, at Roofing Installer's own cost and expense, make or cause to be made such repairs to or replacements of the work as are necessary to correct faulty and defective work and as are necessary to maintain the work in a watertight condition.

D. This Warranty is made subject to the following terms and conditions:

1. Specifically excluded from this Warranty are damages to the work and other parts of the building, and to building contents, caused by:

    a. Lightning;
    b. Peak gust wind speed exceeding **<Insert wind speed>** mph (m/s);
    c. Fire;
    d. Failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
    e. Faulty construction of copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
    f. Vapor condensation on bottom of roofing; and
    g. Activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.

2. When the work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
3. Roofing Installer is responsible for damage to the work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of the work.

4. During Warranty Period, if Owner allows alteration of the work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of the alterations, but only to the extent the alterations affect the work covered by this Warranty. If Owner engages Roofing Installer to perform the alterations, Warranty shall not become null and void unless Roofing Installer, before starting the alterations, notified Owner in writing, showing reasonable cause for claim, that the alterations would likely damage or deteriorate the work, thereby reasonably justifying a limitation or termination of this Warranty.
5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a use or service more severe than originally specified, this Warranty shall become null and void on date of the change, but only to the extent the change affects the work covered by this Warranty.
6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect the work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on the work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of the work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this <**Insert day**> day of <**Insert month**>, <**Insert year**>.

1. Authorized Signature: <**Insert signature**>.
2. Name: <**Insert name**>.
3. Title: <**Insert title**>.

END OF SECTION 073113

SECTION 074113 - STANDING-SEAM METAL ROOF PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Standing-seam metal roof panels.

B. Related Sections:

1. Section 055000 Metal Fabrications for downspouts and accessories.
2. Section 057500 Decorative Formed Metal for metal column covers and beam wraps.
3. Section 072217 Roof Insulation for roof thermal insulation.
4. Section 074213 Formed Wall Panels for metal wall panels.
5. Section 076000 Sheet Metal Flashing and Trim for gutters, flashing and sheet metal.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, metal panel Installer, metal panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of roof accessories and roof-mounted equipment.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
5. Review structural loading limitations of deck during and after roofing.
6. Review flashings, special details, drainage, penetrations and condition of other construction that affect metal panels.
7. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
8. Review temporary protection requirements for metal panel systems during and after installation.
9. Review procedures for repair of metal panels damaged after installation.
10. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

B. Shop Drawings:

1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches (1:10).

C. Samples for Initial Selection: For each type of metal panel indicated with factory-applied color finishes.

1. Include similar Samples of trim and accessories involving color selection.

D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.

1. Metal Panels: 12 inches (305 mm) long by actual panel width. Include clips, fasteners, closures, and other metal panel accessories.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

C. Field quality-control reports.

D. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panels to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on metal panels during installation.

1.9 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.10 COORDINATION

A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.

B. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.11 WARRANTY

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

1. Failures include, but are not limited to, the following:

    a. Structural failures including rupturing, cracking, or puncturing.
    b. Deterioration of metals and other materials beyond normal weathering.

2. Warranty Period: Two years from date of Substantial Completion.

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

    a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
    b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
    c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

C. Special Weathertightness Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that fail to remain weathertight, including leaks, within specified warranty period.

1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Energy Performance: Provide roof panels that are listed on the EPA/DOE's ENERGY STAR "Roof Product List" for low-slope roof products.

B. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E1592:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings.

C. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.

1. Uplift Rating: UL 90.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 STANDING-SEAM METAL ROOF PANELS

A. Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.

1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E1514.

B. Vertical-Rib, Seamed-Joint, Standing-Seam Metal Roof Panels: Formed with vertical ribs at panel edges and intermediate stiffening ribs symmetrically spaced between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels, engaging opposite edge of adjacent panels, and mechanically seaming panels together.

1. Basis of Design: Standing Seam Series SLR-16 by Morin (A Kingspan Group Company).

a. Florida Product Approval: FL13442.3.

2. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A653/A653M, G90 (Z275) coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A792/A792M, Class AZ50 (Class AZM150) coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A755/A755M.

   a. Nominal Thickness: 0.022 inch (0.56 mm).
   b. Panel Texture: Smooth (except for intermediate stiffening ribs/pencil beads).
   c. Exterior Finish: Two-coat fluoropolymer.
   d. Color: As selected by Architect from manufacturer's full range.

3. Clips: One-piece fixed to accommodate thermal movement.

   a. Material: 0.064-inch- (1.63-mm-) nominal thickness, zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet.

4. Joint Type: Double folded.
5. Panel Coverage: 16 inches (406 mm).
6. Panel Height: 1.5 inches (38 mm) to 2.0 inches (51 mm).

2.3 UNDERLAYMENT MATERIALS

A. Self-Adhering, High-Temperature Underlayment: Provide self-adhering, cold-applied, sheet underlayment, a minimum of 30 mils (0.76 mm) thick, consisting of slip-resistant, polyethylene-film top surface laminated to a layer of butyl or SBS-modified asphalt adhesive, with release-paper backing. Provide primer when recommended by underlayment manufacturer.

   1. Thermal Stability: Stable after testing at 240 deg F (116 deg C); ASTM D1970.
   2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F (29 deg C); ASTM D1970.
   3. Basis of Design: “WIP 300HT” by Carlisle.

B. Slip Sheet: Manufacturer's recommended slip sheet, of type required for application.

2.4 MISCELLANEOUS MATERIALS

A. Miscellaneous Metal Subframing and Furring: ASTM C645; cold-formed, metallic-coated steel sheet, ASTM A653/A653M, G90 (Z275 hot-dip galvanized) coating designation or ASTM A792/A792M, Class AZ50 (Class AZM150) coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.

   1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal panels.
   2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.

3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.

D. Gutters and Accessories: Fabricated to match shingle roof areas.

E. Downspouts and Accessories: Fabricated to match shingle roof areas.

F. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

2.5 FABRICATION

A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

C. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
2. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
3. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
5. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.

a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal panel manufacturer for application, but not less than thickness of metal being secured.

2.6 FINISHES

A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are unacceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Steel Panels and Accessories:

1. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.

1. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.

a. Verify that air or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.

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

3.2 PREPARATION

A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C754 and metal panel manufacturer's written recommendations.

3.3 INSTALLATION OF UNDERLAYMENT

A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply at locations indicated below, wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches (152 mm) staggered 24 inches (610 mm) between courses. Overlap side edges not less than 3-1/2 inches (90 mm). Extend down vertical face of wood fascia to bottom edge of fascia. Extend up vertical wall at roof to wall intersection as indicated. Roll laps with roller. Cover underlayment within 14 days.

1. Apply over the entire roof surface.

B. Slip Sheet: Apply slip sheet over underlayment before installing metal roof panels.

C. Flashings: Install flashings to cover underlayment to comply with requirements specified in Section 076200 Sheet Metal Flashing and Trim.

3.4 INSTALLATION OF STANDING SEAM METAL ROOF PANELS

A. Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving metal panels.
2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
3. Install screw fasteners in predrilled holes.
4. Install flashing and trim as metal panel work proceeds.
5. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:

1. Steel Panels: Use stainless steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.

C. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.

D. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

E. Standing-Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended in writing by manufacturer.

1. Install clips to supports with self-tapping fasteners.
2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
3. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.

F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal roof panel manufacturers; or, if not indicated, types recommended by metal roof panel manufacturer.

G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (610 mm) of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

3.5 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align metal panel units within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines as indicated and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.6 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect metal roof panel installation, including accessories. Report results in writing.

B. Remove and replace applications of metal roof panels where tests and inspections indicate that they do not comply with specified requirements.

3.7 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

B. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 074113

SECTION 074213 - FORMED METAL WALL PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Concealed-fastener, lap-seam metal wall panels installed over a wall panel support system.

B. Related Sections:

1. Section 074113 Standing-Seam Metal Roof Panels for metal roof systems.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, metal panel Installer, metal panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of doors, windows, and louvers.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
5. Review flashings, special siding details, wall penetrations, openings, and condition of other construction that affect metal panels.
6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
7. Review temporary protection requirements for metal panel assembly during and after installation.
8. Review of procedures for repair of metal panels damaged after installation.
9. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

B. Shop Drawings:

1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches (1:10).
3. Delegated design for metal wall panel support system as indicated on Drawings. Delegated design shall be by qualified professional engineer actively licensed in State of Florida at time of delegated design submission to Architect.

C. Samples for Initial Selection: For each type of metal panel indicated with factory-applied finishes.

1. Include Samples of trim and accessories involving color selection.

D. Samples for Verification: For each type of exposed finish, prepared on Samples of size indicated below:

1. Metal Panels: 12 inches (305 mm) long by actual panel width. Include fasteners, closures, and other metal panel accessories.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

C. Field quality-control reports.

D. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal panels to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on metal panels during installation.

1.9 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.10 COORDINATION

A. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.11 WARRANTY

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

1. Failures include, but are not limited to, the following:

    a. Structural failures including rupturing, cracking, or puncturing.
    b. Deterioration of metals and other materials beyond normal weathering.

2. Warranty Period: Two years from date of Substantial Completion.

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

    a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
    b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
    c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E1592:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings.

B. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E331 at the following test-pressure difference:

1. Test-Pressure Difference: 6.24 lbf/sq. ft. (300 Pa).

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 CONCEALED-FASTENER, LAP-SEAM METAL WALL PANELS

A. Provide factory-formed metal panels designed to be field assembled by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners in side laps. Include accessories required for weathertight installation including factory applied sealant.

B. Corrugated Profile, Concealed-Fastener Metal Wall Panels: Formed with integral clips and receivers at long panel edges for interlocking of adjacent panels.

1. Basis of Design: Integrity Series S-16 by Morin (A Kingspan Group Company).

a. Florida Product Approval Number: FL16454.

2. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A653/A653M, G90 (Z275) coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A792/A792M, Class AZ50 (Class AZM150) coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A755/A755M.

a. Nominal Thickness: 0.034 inch (0.86 mm).
b. Exterior Finish: Two-coat fluoropolymer.
c. Panel Surface: Smooth (non-textured).
d. Color: As selected by Architect from manufacturer's full range.

3. Panel Coverage: 16 inches (406 mm).
4. Panel Depth: 7/8 inches (22 mm).

2.3 MISCELLANEOUS MATERIALS

A. Miscellaneous Metal Subframing and Furring: ASTM C645, cold-formed, metallic-coated steel sheet, ASTM A653/A653M, G90 (Z275 hot-dip galvanized) coating designation or ASTM A792/A792M, Class AZ50 (Class AZM150) aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.

1. Closures: Provide closures at eaves and rakes, fabricated of same metal as metal panels.
2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae, parapet caps, soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.

D. Panel Fasteners: Self-tapping screws designed to withstand design loads. No exposed panel fasteners.

E. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

2.4 FABRICATION

A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. Provide panel profile, including major corrugations and details, for full length of panel.

C. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.

D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
2. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
3. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
5. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.

a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal wall panel manufacturer for application but not less than thickness of metal being secured.

2.5 FINISHES

A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Steel Panels and Accessories:

1. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.

1. Examine wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal wall panel manufacturer.

2. Wall panel support systems are a delegated design item. Refer to drawings.

B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.

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

3.2 PREPARATION

A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C754 and metal panel manufacturer's written recommendations.

3.3 INSTALLATION

A. Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving metal panels.
2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air or water-resistive barriers and flashings that will be concealed by metal panels are installed.
3. Install screw fasteners in predrilled holes.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Install flashing and trim as metal panel work proceeds.
6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:

1. Steel Panels: Use stainless steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.

C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

D. Lap-Seam Metal Panels: Fasten metal panels to supports with fasteners at each lapped joint at location and spacing recommended by manufacturer.

1. Flash and seal panels with weather closures at perimeter of all openings.

E. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal wall panel manufacturer; or, if not indicated, provide types recommended by metal panel manufacturer.

F. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.

1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (610 mm) of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

3.4 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect completed metal wall panel installation, including accessories.

B. Remove and replace metal wall panels where tests and inspections indicate that they do not comply with specified requirements.

C. Prepare test and inspection reports.

3.5 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

B. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

C. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 074213

SECTION 076200 - SHEET METAL FLASHING AND TRIM

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. Formed roof-drainage sheet metal fabrications.
2. Formed low-slope roof sheet metal fabrications.
3. Formed steep-slope roof sheet metal fabrications.
4. Formed miscellaneous sheet metal fabrications.

B. Related Requirements:

1. Section 042113 Brick Masonry for flashing integral with masonry walls.
2. Section 055000 Metal Fabrications for steel pipe downspout sections.
3. Section 057500 Decorative Formed Metal for column covers and beam covers.
4. Section 061000 Rough Carpentry for wood nailers, curbs, and blocking.
5. Section 073113 Asphalt Shingles for flashing installation related to shingle roof systems.
6. Section 074113 Standing-Seam Metal Roof Panels for flashing installation related to metal roof systems.

1.3 COORDINATION

A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.

B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site. Combine with Preinstallation Conference for Asphalt Shingle Roofing.

1. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review special roof details, roof drainage, roof-penetration flashing, and condition of other construction that affect sheet metal flashing and trim.

3. Review sheet metal flashing observation and repair procedures after flashing installation.

1.5 ACTION SUBMITTALS

A. Product Data: For each of the following

1. Sealants specific for metal flashing.
2. Fasteners specific for metal flashing.
3. Epoxy seam sealer.

B. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, and attachment details.
2. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled Work.
3. Include identification of material, thickness, weight, and finish for each item and location in Project.
4. Include details for forming, including profiles, shapes, seams, and dimensions.
5. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
6. Include details of termination points and assemblies.
7. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.
8. Include details of roof-penetration flashing.
9. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, flashings, and counterflashings.
10. Include details of special conditions.
11. Include details of connections to adjoining work.
12. Detail formed flashing and trim at scale of not less than 1-1/2 inches per 12 inches (1:10).

C. Samples:

1. Sheet Metal Flashing: 12 inches (300 mm) long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, clips, closures, and other attachments.
2. Trim, Metal Closures, Expansion Joints, Joint Intersections, and Miscellaneous Fabrications: 12 inches (300 mm) long and in required profile. Include fasteners and other exposed accessories.
3. Unit-Type Accessories and Miscellaneous Materials: Full-size Sample.
4. Anodized Aluminum Samples: Samples to show full range to be expected for each color required.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For sheet metal flashing and trim, and its accessories, to include in maintenance manuals.

1.8 QUALITY ASSURANCE

A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.

1. Build mockup of typical gutter and drip edge. Gutter to be approximately four (4) feet long, including supporting construction cleats, seams, brackets, attachments and accessories.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Owner specifically approves such deviations in writing.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
2. Protect stored sheet metal flashing and trim from contact with water.

B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Sheet metal flashing and trim assemblies, including cleats, anchors, and fasteners, shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual: Architectural Metal Flashing, Condensation and Air Leakage Control, and Reroofing" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.

C. SPRI Wind Design Standard: Manufacture and install roof edge flashings tested in accordance with ANSI/SPRI/FM 4435/ES-1 and capable of resisting the following design pressure:

1. Design Pressure: As indicated on Drawings.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 SHEET METALS

A. Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Aluminum Sheet: ASTM B209 (ASTM B209M), alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required; with smooth, flat surface.

1. Clear Anodic Finish, Coil Coated: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker unless otherwise indicated herein.

C. Lead Sheet: ASTM B749 lead sheet.

2.3 MISCELLANEOUS MATERIALS

A. Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.

a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
b. Blind Fasteners: High-strength aluminum or stainless steel rivets suitable for metal being fastened.

2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.

C. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, non-sag, nontoxic, non-staining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.

D. Elastomeric Sealant: ASTM C920, elastomeric polyurethane, polysulfide or silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

E. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

F. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.

G. Bituminous Coating: Cold-applied asphalt emulsion in accordance with ASTM D1187/D1187M.

H. Asphalt Roofing Cement: ASTM D4586, asbestos free, of consistency required for application.

2.4 FABRICATION, GENERAL

A. Custom fabricate sheet metal flashing and trim to comply with details indicated and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required.

1. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
2. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
3. Verify shapes and dimensions of surfaces to be covered and obtain field measurements for accurate fit before shop fabrication.
4. Form sheet metal flashing and trim to fit substrates without excessive oil-canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
5. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Fabrication Tolerances:

1. Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines indicated on Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.
2. Fabricate sheet metal flashing and trim that is capable of installation to tolerances specified.

C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.

D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal in accordance with cited sheet metal standard to provide for proper installation of elastomeric sealant.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.

G. Seams:

1. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints where necessary for strength.

H. Do not use graphite pencils to mark metal surfaces.

2.5 ROOF-DRAINAGE SHEET METAL FABRICATIONS

A. Hanging Gutters:

1. Fabricate to cross section required, complete with end pieces, outlet tubes, and other accessories as required.
2. Fabricate in minimum 96-inch- (2400-mm-) long sections.
3. Furnish flat-stock gutter brackets and flat-stock gutter spacers and straps fabricated from same metal as gutters, of size recommended by cited sheet metal standard, but with thickness not less than dimension indicated on Drawings.
4. Fabricate expansion joints, expansion-joint covers, gutter bead reinforcing bars, and gutter accessories from same metal as gutters.
5. Gutter Profile: Style A in accordance with cited sheet metal standard.
6. Expansion Joints: Butt type with cover plate.
7. Gutters with Girth 21 to 25 Inches (530 mm to 640 mm): Fabricate from the following materials:

a. Aluminum: 0.050 inch (1.27 mm) thick.

B. Downspouts: Fabricate round downspouts to dimensions indicated on Drawings, complete with mitered elbows. Furnish with metal hangers from same material as downspouts and anchors. Shop fabricate transitions from round aluminum downspouts to round pipe downspouts.

1. Fabricated or Manufactured Hanger Style: Fig. 1-35D in accordance with SMACNA's "Architectural Sheet Metal Manual."
2. Fabricate from the following materials:

a. Aluminum: 0.032 inch (0.81 mm) thick.

2.6 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Applicable for concrete eyebrows at entrances to Building No. 11.

B. Roof Edge Flashing and Fascia Cap: Fabricate in minimum 96-inch- (2400-mm-) long, but not exceeding 12-foot- (3.6-m-) long sections. Furnish with 6-inch- (150-mm-) wide, joint cover plates. Shop fabricate interior and exterior corners.

1. Joint Style: Butted with expansion space and 6-inch- (150-mm-) wide, exposed cover plate.
2. Fabricate from the following materials:

a. Aluminum: 0.050 inch (1.27 mm) thick.

C. Counterflashing: Fabricate from the following materials:

1. Aluminum: 0.032 inch (0.81 mm) thick.

2.7 STEEP-SLOPE ROOF SHEET METAL FABRICATIONS

A. Drip Edges and Exposed Flashing: Fabricate from the following materials:

1. Aluminum: 0.050 inch (1.27 mm) thick.

B. Roof-Penetration Flashing: Fabricate from the following materials:

1. Lead: 4 lb (1.8 kg).

2.8 MISCELLANEOUS SHEET METAL FABRICATION

A. Exposed Metal Facings: Fabricate from the following materials:

1. Aluminum: 0.090 inch (2.28 mm) thick.
2. Uses: Beam cover and wall cladding at southwest corner of Building No. 11.
3. Finishes: Beam cover and wall cladding finish shall be high-performance PVDF to match column covers. Refer to Section 057500 Decorative Formed Metal.
4. Contractor's Option: Contractor shall have the option to factory or field fabricate beam cover and wall cladding over aluminum-framed storefront as specified in Section 057500 Decorative Formed Metal or provide field fabricated brake metal beam cover under this Section.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.

1. Verify compliance with requirements for installation tolerances of substrates.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

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

3.2 INSTALLATION, GENERAL

A. Install sheet metal flashing and trim to comply with details indicated and recommendations of cited sheet metal standard that apply to installation characteristics required unless otherwise indicated on Drawings.

1. Install fasteners, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
2. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of welds and sealant.
3. Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement.
4. Install sheet metal flashing and trim to fit substrates and to result in watertight performance.
5. Install continuous cleats with fasteners spaced not more than 12 inches (300 mm) o.c.
6. Install exposed sheet metal flashing and trim with limited oil-canning, and free of buckling and tool marks.
7. Do not field cut sheet metal flashing and trim by torch.
8. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.

1. Coat concealed side of uncoated-aluminum sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.

D. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

F. Seal joints as required for watertight construction.

1. Use sealant-filled joints unless otherwise indicated.

a. Embed hooked flanges of joint members not less than 1 inch (25 mm) into sealant.
b. Form joints to completely conceal sealant.
c. When ambient temperature at time of installation is between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement each way.
d. Adjust setting proportionately for installation at higher ambient temperatures.

1) Do not install sealant-type joints at temperatures below 40 deg F (4 deg C).

2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

G. Rivets: Rivet joints in uncoated aluminum where necessary for strength.

3.3 INSTALLATION OF ROOF-DRAINAGE SYSTEM

A. Install sheet metal roof-drainage items to produce complete roof-drainage system in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.

B. Hanging Gutters:

1. Join sections with joints sealed with sealant.
2. Provide for thermal expansion.
3. Attach gutters at eave or fascia to firmly anchor them in position.
4. Provide end closures and seal watertight with sealant.
5. Slope to downspouts.
6. Fasten gutter spacers to front and back of gutter.
7. Anchor gutter with gutter brackets spaced not more than 32 inches (813 mm) apart to roof deck unless otherwise indicated, and loosely lock to front gutter bead.
8. Install gutter with expansion joints at locations indicated on Drawings, but not exceeding, 50 feet (15.2 m) apart. Install expansion-joint caps.

C. Downspouts:

1. Join sections with 1-1/2-inch (38-mm) telescoping joints.
2. Provide hangers with fasteners designed to hold downspouts securely to walls.
3. Locate hangers at top and bottom and at approximately 60 inches (1500 mm) o.c.
4. Connect downspouts to steel pipe downspouts which eventually connect to ground drainage system or discharge to grade as indicated on Drawings.

3.4 INSTALLATION OF ROOF FLASHINGS

A. Install sheet metal flashing and trim to comply with performance requirements and cited sheet metal standard.

1. Provide concealed fasteners where possible, and set units true to line, levels, and slopes.
2. Install work with laps, joints, and seams that are permanently watertight and weather resistant.

B. Roof Edge Flashing:

1. Anchor to resist uplift and outward forces associated with wind pressures indicated on Drawings or in accordance with recommendations in cited sheet metal standard whichever are greater. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate at staggered 3-inch (75-mm) centers.

C. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof.

3.5 INSTALLATION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines indicated on Drawings and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

3.6 CLEANING

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean off excess sealants.

3.7 PROTECTION

A. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.

B. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended in writing by sheet metal flashing and trim manufacturer.

C. Maintain sheet metal flashing and trim in clean condition during construction.

D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures, as determined by Architect.

END OF SECTION 076200

SECTION 078413 - PENETRATION FIRESTOPPING

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. Penetration firestopping systems for the following applications:

a. Penetrations in fire-resistance-rated walls (if any).
b. Penetrations in horizontal assemblies (such as equipment platforms).
c. Penetrations in smoke barriers.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Product Schedule: For each penetration firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing and inspecting agency.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For each penetration firestopping system, for tests performed by a qualified testing agency.

1.5 CLOSEOUT SUBMITTALS

A. Installer Certificates: From Installer indicating that penetration firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not install penetration firestopping system when ambient or substrate temperatures are outside limits permitted by penetration firestopping system manufacturers or when substrates are wet because of rain, frost, condensation, or other causes.

B. Install and cure penetration firestopping materials per manufacturer's written instructions using natural means of ventilations or, where this is inadequate, forced-air circulation.

1.7 COORDINATION

A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping systems can be installed according to specified firestopping system design.

B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping systems.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics:

1. Perform penetration firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.
2. Test per testing standards referenced in "Penetration Firestopping Systems" Article. Provide rated systems complying with the following requirements:

    a. Penetration firestopping systems shall bear classification marking of a qualified testing agency.

        1) UL in its "Fire Resistance Directory."
        2) Intertek Group in its "Directory of Listed Building Products."
        3) FM Approval in its "Approval Guide."

2.2 PENETRATION FIRESTOPPING SYSTEMS

A. Penetration Firestopping Systems: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.

B. Penetrations in Fire-Resistance-Rated Walls: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).

1. F-Rating: Not less than the fire-resistance rating of constructions penetrated.

C. Penetrations in Horizontal Assemblies: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).

1. F-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated.
2. T-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.

3. W-Rating: Provide penetration firestopping systems showing no evidence of water leakage when tested according to UL 1479.

D. Penetrations in Smoke Barriers: Penetration firestopping systems with ratings determined per UL 1479, based on testing at a positive pressure differential of 0.30-inch wg (74.7 Pa).

1. L-Rating: Not exceeding 5.0 cfm/sq. ft. (0.025 cu. m/s per sq. m) of penetration opening at and no more than 50-cfm (0.024-cu. m/s) cumulative total for any 100 sq. ft. (9.3 sq. m) at both ambient and elevated temperatures.

E. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, per ASTM E84.

F. Manufactured Piping Penetration Firestopping System: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).

1. F-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated.
2. T-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
3. W-Rating: Provide penetration firestopping systems showing no evidence of water leakage when tested according to UL 1479.
4. Sleeve: Molded-PVC plastic, of length to match slab thickness and with integral nailing flange on one end for installation in cast-in-place concrete slabs.
5. Stack Fitting: ASTM A48/A48M, gray-iron, hubless-pattern wye branch with neoprene O-ring at base and gray-iron plug in thermal-release harness. Include PVC protective cap for plug.
6. Special Coating: Corrosion resistant on interior of fittings.

G. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping system manufacturer and approved by qualified testing and inspecting agency for conditions indicated.

1. Permanent forming/damming/backing materials.
2. Substrate primers.
3. Collars.
4. Steel sleeves.

2.3 FILL MATERIALS

A. Cast-in-Place Firestop Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer sleeve lined with an intumescent strip, a flange attached to one end of the sleeve for fastening to concrete formwork, and a neoprene gasket.

B. Latex Sealants: Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.

C. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.

D. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced intumescent elastomeric sheet bonded to galvanized-steel sheet.

E. Intumescent Putties: Nonhardening, water-resistant, intumescent putties containing no solvents or inorganic fibers.

F. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.

G. Mortars: Prepackaged dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogeneous mortar.

H. Pillows/Bags: Reusable heat-expanding pillows/bags consisting of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents, and fire-retardant additives. Where exposed, cover openings with steel-reinforcing wire mesh to protect pillows/bags from being easily removed.

I. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, non-shrinking foam.

J. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants.

2.4 MIXING

A. Penetration Firestopping Materials: For those products requiring mixing before application, comply with penetration firestopping system manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.

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

3.2 PREPARATION

A. Surface Cleaning: Before installing penetration firestopping systems, clean out openings immediately to comply with manufacturer's written instructions and with the following requirements:

1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of penetration firestopping materials.

2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with penetration firestopping materials. Remove loose particles remaining from cleaning operation.
3. Remove laitance and form-release agents from concrete.

B. Prime substrates where recommended in writing by manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

3.3 INSTALLATION

A. General: Install penetration firestopping systems to comply with manufacturer's written installation instructions and published drawings for products and applications.

B. Install forming materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings.

1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not forming permanent components of firestopping.

C. Install fill materials by proven techniques to produce the following results:

1. Fill voids and cavities formed by openings, forming materials, accessories and penetrating items to achieve required fire-resistance ratings.
2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

A. Wall Identification: Permanently label walls containing penetration firestopping systems.

1. Locate in accessible concealed floor, floor-ceiling, or attic space.
2. Refer to signage indicated on Drawings.

B. Penetration Identification: Identify each penetration firestopping system with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches (150 mm) of penetration firestopping system edge so labels are visible to anyone seeking to remove penetrating items or firestopping systems. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:

1. The words "Warning - Penetration Firestopping - Do Not Disturb. Notify NCSD Facilities of Any Damage."
2. Contractor's name, address, and phone number.
3. Designation of applicable testing and inspecting agency.
4. Date of installation.

5. Manufacturer's name.
6. Installer's name.

3.5 FIELD QUALITY CONTROL

A. Where deficiencies are found or penetration firestopping system is damaged or removed because of testing, repair or replace penetration firestopping system to comply with requirements.

B. Proceed with enclosing penetration firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

3.6 CLEANING AND PROTECTION

A. Clean off excess fill materials adjacent to openings as the Work progresses by methods and with cleaning materials that are approved in writing by penetration firestopping system manufacturers and that do not damage materials in which openings occur.

B. Provide final protection and maintain conditions during and after installation that ensure that penetration firestopping systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, immediately cut out and remove damaged or deteriorated penetration firestopping material and install new materials to produce systems complying with specified requirements.

3.7 PENETRATION FIRESTOPPING SYSTEM SCHEDULE

A. Contractor to select firestopping systems and submit to Architect for review and approval. Systems shall be UL-classified, Intertek Group-listed or FM-approved. Format of schedule should be substantially as indicated herein.

B. (Example) Type of Penetration Firestopping System: Void with No Penetrating Items:

1. UL-Classified Systems: (Insert Designation).
2. Intertek Group-Listed Systems: (Insert Designation).
3. FM Approval**-**Approved Systems: (Insert Designation).
4. F-Rating: (Insert Number of Hours).
5. T-Rating: (Insert Number of Hours).
6. L**-**Rating at Ambient: Less than: (Insert cfm/sq. ft. (cu. m/s per sq. m)).
7. L**-**Rating at 400 Deg F (204 Deg C): Less than: (Insert cfm/sq. ft. (cu. m/s per sq. m)).
8. W-Rating: No leakage of water at completion of water leakage testing.
9. Type of Fill Materials: (Insert material).

END OF SECTION 078413

SECTION 079200 - JOINT SEALANTS

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-staining silicone joint sealants.
2. Urethane joint sealants.
3. Mildew-resistant joint sealants.
4. Butyl joint sealants.
5. Latex joint sealants.

1.3 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch (13 mm) wide joints formed between two 6-inch (150 mm) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

D. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency.

B. Product Test Reports: For each kind of joint sealant, for tests performed by manufacturer and witnessed by a qualified testing agency or performed by a qualified testing agency.

C. Preconstruction Laboratory Test Reports: From sealant manufacturer, indicating the following:

1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation are needed for adhesion.

D. Sample Warranties: For special warranties.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

B. Product Testing: Test joint sealants using a qualified testing agency.

1. Testing Agency Qualifications: Qualified according to ASTM C1021 to conduct the testing indicated.

C. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

1.6 FIELD CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (5 deg C).
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.7 WARRANTY

A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 NONSTAINING SILICONE JOINT SEALANTS

A. Nonstaining Joint Sealants: No staining of substrates when tested according to ASTM C1248.

B. Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 50, Use NT.

2.3 URETHANE JOINT SEALANTS

A. Urethane, S, NS, 25, NT: Single-component, nonsag, nontraffic-use, plus 25 percent and minus 25 percent movement capability, urethane joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.

B. Urethane, S, P, 25, T, NT: Single-component, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type S, Grade P, Class 25, Uses T and NT.

2.4 MILDEW-RESISTANT JOINT SEALANTS

A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.

B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.

2.5 BUTYL JOINT SEALANTS

A. Butyl-Rubber-Based Joint Sealants: ASTM C1311.

2.6 LATEX JOINT SEALANTS

A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.

2.7 JOINT-SEALANT BACKING

A. Sealant Backing Material, General: Non-staining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin), Type O (open-cell material), Type B (bicellular material with a surface skin) or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.8 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Non-staining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.

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

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

    a. Concrete.
    b. Masonry.
    c. Unglazed surfaces of ceramic tile.

3. Remove laitance and form-release agents from concrete.
4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:

    a. Metal.
    b. Glass.
    c. Porcelain enamel.
    d. Glazed surfaces of ceramic tile.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C1193 unless otherwise indicated.

3.4 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed and cured sealant joints as follows:

a. Perform 10 tests for the first 1000 feet (300 m) of joint length for each kind of sealant and joint substrate.
b. Perform one test for each 1000 feet (300 m) of joint length thereafter or one test per each floor per elevation.

2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C1193 or Method A, Tail Procedure, in ASTM C1521.

a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

3. Inspect tested joints and report on the following:

a. Whether sealants filled joint cavities and are free of voids.
b. Whether sealant dimensions and configurations comply with specified requirements.
c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion complies with sealant manufacturer's field-adhesion hand-pull test criteria.

4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant material, sealant configuration, and sealant dimensions.
5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.7 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal non-traffic surfaces (JS-1).

1. Joint Locations:

    a. Construction joints in cast-in-place concrete.
    b. Control and expansion joints in brick and concrete unit masonry.
    c. Joints between different materials listed above.
    d. Perimeter joints between materials listed above and frames of doors, windows and louvers.
    e. Control and expansion joints in ceilings and other overhead surfaces.

2. Joint Sealant: Silicone, non-staining, S, NS, 50, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

B. Joint-Sealant Application: Interior joints in horizontal traffic surfaces (JS-2).

1. Joint Locations:

    a. Isolation joints in cast-in-place concrete slabs.
    b. Control and expansion joints in tile flooring.

2. Joint Sealant: Urethane, S, P, 25, T, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

C. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal non-traffic surfaces (JS-3).

1. Joint Locations:

a. Control and expansion joints on exposed interior surfaces of exterior walls.
b. Tile control and expansion joints except as indicated in JS-2.
c. Vertical joints on exposed surfaces of unit masonry walls and concrete elements.

2. Joint Sealant: Urethane, S, NS, 25, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

D. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal non-traffic surfaces not subject to significant movement (JS-4).

1. Joint Locations:

a. Joints on exposed interior surfaces of exterior walls not otherwise indicated in JS-3.
b. Perimeter joints between interior wall surfaces and frames of interior doors windows.

2. Joint Sealant: Acrylic latex.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

E. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal non-traffic surfaces (JS-5).

1. Joint Locations:

a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
b. Tile control and expansion joints where indicated.

2. Joint Sealant: Silicone, mildew resistant, acid curing, S, NS, 25, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

F. Joint-Sealant Application: Concealed mastics (JS-6).

1. Joint Locations:

a. Aluminum thresholds.
b. Sill plates.

2. Joint Sealant: Butyl-rubber based.
3. Joint-Sealant Color: Contractor’s option.

END OF SECTION 079200

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

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 standard steel door frames.
2. Exterior standard steel doors and frames.

B. Related Requirements:

1. Section 081416 Wood Doors for wood doors to be fitted in hollow-metal door frames.
2. Section 087100 Door Hardware for door hardware for hollow-metal doors.

1.3 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or ANSI/SDI A250.8.

1.4 COORDINATION

A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, core descriptions, fire-resistance ratings, temperature-rise ratings, and finishes.

B. Shop Drawings: Include the following:

1. Elevations of each door type.
2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of anchorages, joints, field splices, and connections.
7. Details of accessories.
8. Details of moldings, removable stops, and glazing.

C. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

1.6 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each type of fire-rated hollow-metal door and frame assembly for tests performed by a qualified testing agency indicating compliance with performance requirements.

B. Florida Product Approval for exterior hollow-metal door and frame assemblies.

1.7 CLOSEOUT SUBMITTALS

A. Record Documents: For fire-rated doors (if any), list of door numbers and applicable room name and number to which door accesses.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use non-vented plastic.

1. Provide additional protection to prevent damage to factory-finished units.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch (102 mm) high wood blocking. Provide minimum 1/4-inch (6-mm) space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design – Hollow Metal Frames: “Series SU” by Assa Abloy Ceco Door.

B. Basis of Design – Hollow Metal Doors: “Series IU” by Assa Abloy Ceco Door.

C. Basis of Design – Florida Product Approval Number: FL 4553.1.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings and temperature-rise limits indicated on Drawings, based on testing at positive pressure according to NFPA 252 or UL 10C.

1. Smoke- and Draft-Control Door Assemblies: Listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL 1784 and installed in compliance with NFPA 105.
2. Temperature-Rise Limit: At exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F (250 deg C) above ambient after 30 minutes of standard fire-test exposure.

2.3 INTERIOR STANDARD STEEL DOOR FRAMES

A. Construct hollow-metal door frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Heavy-Duty Door Frames: ANSI/SDI A250.8, Level 2; ANSI/SDI A250.4, Level B.

1. Frames:

a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch (1.3 mm).
b. Transom Frames: Fabricated from same thickness material as adjacent door frame.
c. Construction: Full profile welded.

2. Exposed Finish: Prime.

2.4 EXTERIOR STANDARD STEEL DOORS AND FRAMES

A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Extra-Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 3; ANSI/SDI A250.4, Level A.

1. Doors:

a. Type: As indicated in the Door and Frame Schedule.
b. Thickness: 1-3/4 inches (44.5 mm).
c. Face: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm), with minimum A40 (ZF120) coating.
d. Edge Construction: Model 2, Seamless.
e. Edge Bevel: Provide manufacturer's standard beveled or square edges.
f. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.

g. Bottom Edges: Close bottom edges of doors with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.
h. Core: Polyurethane.

2. Frames:

a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch (1.3 mm), with minimum A40 (ZF120) coating.
b. Construction: Full profile welded.

3. Exposed Finish: Prime.

2.5 FRAME ANCHORS

A. Jamb Anchors:

1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches (610 mm) of frame height above 7 feet (2.1 m).
3. Postinstalled Expansion Anchor: Minimum 3/8-inch- (9.5-mm-) diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer. Use only where approved by Architect.

B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.

C. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z (12G) coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M; hot-dip galvanized according to ASTM A153/A153M, Class B.

2.6 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

C. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B.

D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A153/A153M.

E. Glazing: Comply with requirements in Section 088000 Glazing.

2.7 FABRICATION

A. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.

1. Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by welding.
2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
3. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.

    a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.

B. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping according to ANSI/SDI A250.6, the Door Hardware Schedule, and templates.

1. Reinforce doors and frames to receive non-templated, mortised, and surface-mounted door hardware.
2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.

C. Glazed Lites: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with mitered hairline joints.

1. Provide stops and moldings flush with face of door, and with beveled stops unless otherwise indicated.
2. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames. Provide loose stops and moldings on inside of hollow-metal doors and frames.
3. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.
4. Provide stops for installation with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches (230 mm) o.c. and not more than 2 inches (51 mm) o.c. from each corner.

2.8 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 - EXECUTION

3.1 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.

B. Drill and tap doors and frames to receive non-templated, mortised, and surface-mounted door hardware.

3.2 INSTALLATION

A. Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.

B. Hollow-Metal Frames: Comply with ANSI/SDI A250.11.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.

    a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
    b. Install frames with removable stops located on secure side of opening.

2. Fire-Rated Openings: Install frames according to NFPA 80.
3. Floor Anchors: Secure with post-installed expansion anchors.

    a. Power-actuated fasteners are not approved for use on public school sites.

4. Solidly pack mineral-fiber insulation inside frames.
5. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout or mortar.
6. In-Place Concrete or Masonry Construction: If approved by Architect, secure frames in place with post-installed expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
7. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:

    a. Squareness: Plus or minus 1/16 inch (1.6 mm), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
    b. Alignment: Plus or minus 1/16 inch (1.6 mm), measured at jambs on a horizontal line parallel to plane of wall.
    c. Twist: Plus or minus 1/16 inch (1.6 mm), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
    d. Plumbness: Plus or minus 1/16 inch (1.6 mm), measured at jambs at floor.

C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.

1. Non-Fire-Rated Steel Doors: Comply with ANSI/SDI A250.8.
2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
3. Smoke-Control Doors: Install doors according to NFPA 105.

D. Glazing: Comply with installation requirements in Section 088000 Glazing and with hollow-metal manufacturer's written instructions.

3.3 REPAIR

A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

B. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

C. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION 081113

SECTION 081416 - FLUSH WOOD DOORS

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. Five-ply flush wood veneer-faced doors for transparent finish.
2. Factory finishing wood doors.
3. Factory machining wood doors for hardware.

B. Related Requirements:

1. Section 081113 Steel Doors and Frames for hollow-metal frames for wood doors.
2. Section 087100 Door Hardware for hardware for wood doors.
3. Section 088000 Glazing for glass view panels in wood doors.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product, including the following:

1. Door core materials and construction.
2. Door edge construction
3. Door face type and characteristics.
4. Factory-machining criteria.
5. Factory- finishing specifications.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each type of door; construction details not covered in Product Data; and the following:

1. Door schedule indicating door location, type, size, fire protection rating, and swing.
2. Door elevations, dimension and locations of hardware, lite cutouts, and glazing thicknesses.
3. Dimensions and locations of blocking for hardware attachment.
4. Dimensions and locations of mortises and holes for hardware.
5. Clearances and undercuts.
6. Doors to be factory finished and application requirements.

C. Samples for Initial Selection: For factory-finished doors.

D. Samples for Verification:

1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches (200 by 250 mm), for each material and finish. For each wood species and transparent finish, provide set of three Samples showing typical range of color and grain to be expected in finished Work.
2. Frames for light openings, 6 inches (150 mm) long, for each material, type, and finish required.

1.4 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Special warranties.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package doors individually in plastic bags or cardboard cartons.

C. Mark each door on bottom rail with opening number used on Shop Drawings.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and HVAC system is operating and maintaining temperature and relative humidity at levels designed for building occupants for the remainder of construction period.

B. Environmental Limitations: Do not deliver or install doors until building is enclosed and weathertight, wet work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg F (16 and 32 deg C) and relative humidity between 43 and 70 percent during remainder of construction period.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Delamination of veneer.
b. Warping (bow, cup, or twist) more than 1/4 inch (6.4 mm) in a 42-by-84-inch (1067-by-2134-mm) section.
c. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch (0.25 mm in a 76.2-mm) span.

2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
3. Warranty Period for Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain flush wood doors from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Rated Wood Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction, for fire-protection ratings and temperature-rise limits indicated on Drawings, based on testing at positive pressure in accordance with UL 10C or NFPA 252.

1. Temperature-Rise Limit: At vertical exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F (250 deg C) above ambient after 30 minutes of standard fire-test exposure.

B. Smoke- and Draft-Control Door Assemblies: Listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing in accordance with UL 1784 and installed in compliance with NFPA 105.

2.3 FLUSH WOOD DOORS, GENERAL

A. Quality Standard: In addition to requirements specified, comply with ANSI/WDMA I.S. 1A.

1. Provide labels and certificates from WI certification program indicating that doors comply with requirements of grades specified.

2.4 SOLID-CORE FIVE-PLY FLUSH WOOD VENEER-FACED DOORS FOR TRANSPARENT FINISH

A. Interior Doors:

1. Basis of Design: “Aspiro Series | Marshfield-Algoma” by Masonite Architectural.
2. Performance Grade: ANSI/WDMA I.S. 1A Heavy Duty.
3. Performance Grade:

    a. ANSI/WDMA I.S. 1A Heavy Duty unless otherwise indicated on Drawings.

4. ANSI/WDMA I.S. 1A Grade: Premium.
5. Faces: Single-ply wood veneer not less than 1/50 inch (0.508 mm) thick.

    a. Species: Select white birch.

b. Cut: Rotary cut.
c. Match between Veneer Leaves: Random match.
d. Assembly of Veneer Leaves on Door Faces: Center-balance match.
e. Room Match: Match door faces within each separate room or area of building. Corridor-door faces do not need to match where they are separated by 10 feet (3 m) or more.

6. Exposed Vertical Edges: Same species as faces - Architectural Woodwork Standards edge Type A.

   a. Fire-Rated Single Doors: Provide edge construction with intumescent seals concealed by outer stile. Comply with specified requirements for exposed vertical edges.

7. Core for Non-Fire-Rated Doors:

   a. ANSI A208.1, Grade LD-2 particleboard.

      1) Blocking: Provide wood blocking in particleboard-core doors as follows:

         a) 5-inch (125-mm) top-rail blocking, in doors indicated to have closers.
         b) 5-inch (125-mm) bottom-rail blocking, in exterior doors and doors indicated to have kick, mop, or armor plates.
         c) 5-inch (125-mm) midrail blocking, in doors indicated to have exit devices.

8. Core for Fire-Rated Doors: As required to achieve fire-protection rating indicated on Drawings.

9. Construction: Five plies, hot-pressed bonded (vertical and horizontal edging is bonded to core), with entire unit abrasive planed before veneering.

2.5 LIGHT FRAMES AND LOUVERS

A. Wood Beads for Light Openings in Wood Doors: Provide manufacturer's standard wood beads unless otherwise indicated.

1. Wood Species: Species compatible with door faces.
2. Profile: Flush rectangular beads.
3. At wood-core doors with 20-minute fire-protection ratings, provide wood beads and metal glazing clips approved for such use.

2.6 FABRICATION

A. Factory fit doors to suit frame-opening sizes indicated.

1. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
2. Comply with NFPA 80 requirements for fire-rated doors.

B. Factory machine doors for hardware that is not surface applied.

1. Locate hardware to comply with DHI-WDHS-3.

2. Comply with final hardware schedules, door frame Shop Drawings, ANSI/BHMA-156.115-W, and hardware templates.
3. Coordinate with hardware mortises in metal frames, to verify dimensions and alignment before factory machining.

C. Openings: Factory cut and trim openings through doors.

1. Light Openings: Trim openings with moldings of material and profile indicated.
2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Section 088000 Glazing.

2.7 FACTORY FINISHING

A. Comply with referenced quality standard for factory finishing.

1. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
2. Finish faces, all four edges, edges of cutouts, and mortises.
3. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises.

B. Factory finish doors.

C. Transparent Finish:

1. ANSI/WDMA I.S. 1A Grade: Premium.
2. Finish: ANSI/WDMA I.S. 1A TR-8 UV Cured Acrylated Polyester/Urethane
3. Staining: As selected by Architect from manufacturer's full range.
4. Effect: Open-grain finish.
5. Sheen: Satin.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and installed door frames, with Installer present, before hanging doors.

1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
2. Reject doors with defects.

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

3.2 INSTALLATION

A. Hardware: For installation, see Section 087100 Door Hardware.

B. Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.

C. Job-Fitted Doors:

1. Align and fit doors in frames with uniform clearances and bevels as indicated below.

    a. Do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors.

2. Machine doors for hardware.
3. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
4. Clearances:

    a. Provide 1/8 inch (3.2 mm) at heads, jambs, and between pairs of doors.
    b. Provide 1/8 inch (3.2 mm) from bottom of door to top of decorative floor finish or covering unless otherwise indicated on Drawings.
    c. Where threshold is shown or scheduled, provide1/4 inch (6.4 mm) from bottom of door to top of threshold unless otherwise indicated.
    d. Comply with NFPA 80 for fire-rated doors.

5. Bevel non-fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) at lock and hinge edges.
6. Bevel fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) at lock edge; trim stiles and rails only to extent permitted by labeling agency.

D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 ADJUSTING

A. Operation: Rehang or replace doors that do not swing or operate freely.

B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 081416

SECTION 083113 - ACCESS DOORS AND FRAMES

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. Access doors and frames.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details material descriptions, dimensions of individual components and profiles, and finishes.

B. Product Schedule: For access doors and frames.

PART 2 - PRODUCTS

2.1 ACCESS DOORS AND FRAMES

A. Flush Access Doors with Exposed Flanges:

1. Basis of Design: “TMG” by Activar Construction Products Group / J. L. Industries.
2. Description: Face of door flush with frame, with exposed flange and concealed hinge.
3. Optional Features: Piano hinges.
4. Locations: Wall and ceiling.
5. Door Size: As required for application.
6. Metallic-Coated Steel Sheet for Door: Nominal 0.064 inch (1.63 mm), 16 gage, factory primed.
7. Frame Material: Same material, thickness, and finish as door.
8. Latch and Lock: Cam latch, screwdriver operated.

B. Exterior Flush Access Doors:

1. Basis of Design: “TMEG” by Activar Construction Products Group / J. L. Industries.
2. Description: Weatherproof assembly, with face of door fit flush with frame and with exposed frame. Include extruded door gaskets.

3. Optional Features: Piano hinges.
4. Locations: Suspended stucco soffits as required.
5. Door Size: As required for application.
6. Metallic-Coated Steel Sheet for Door: Nominal 0.064 inch (1.63 mm), 16 gage, factory primed.
7. Frame Material: Same material, thickness, and finish as door.
8. Latch and Lock: Cam latch, screwdriver operated.

2.2 MATERIALS

A. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

B. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

C. Frame Anchors: Same material as door face.

D. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A153/A153M or ASTM F2329.

2.3 FABRICATION

A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.

B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish mounting holes, attachment devices and fasteners of type required to secure access doors to types of supports indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

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

3.2 INSTALLATION

A. Comply with manufacturer's written instructions for installing access doors and frames.

3.3 ADJUSTING

A. Adjust doors and hardware, after installation, for proper operation.

END OF SECTION 083113

SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

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. Aluminum-framed storefront systems.
2. Aluminum-framed entrance door systems.

B. Related Requirements:

1. Section 087100 Door Hardware for miscellaneous door hardware for aluminum entrances.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: For aluminum-framed entrances and storefronts. Include plans, elevations, sections, full-size details, and attachments to other work.

1. Include details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
2. Include full-size isometric details of each type of vertical-to-horizontal intersection of aluminum-framed entrances and storefronts, showing the following:

a. Joinery, including concealed welds.
b. Anchorage.
c. Expansion provisions.
d. Glazing.
e. Flashing and drainage.

3. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.

C. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.

D. Entrance Door Hardware Schedule: Prepared by or under supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

E. Delegated-Design Submittal: For aluminum-framed entrances and storefronts including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data:

1. For Installer.
2. For professional engineer's experience with providing delegated-design engineering services of the kind indicated, including documentation that engineer is licensed in the state in which Project is located.

B. Energy Performance Certificates: For aluminum-framed entrances and storefronts, accessories, and components, from manufacturer.

1. Basis for Certification: NFRC-certified energy performance values for each aluminum-framed entrance and storefront.

C. Product Test Reports: For aluminum-framed entrances and storefronts, for tests performed by a qualified testing agency.

D. Florida Product Approvals for aluminum framed storefront systems and aluminum entrance systems.

E. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For aluminum-framed entrances and storefronts to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer and that employs a qualified glazing contractor for this Project who is certified under the North American Contractor Certification Program (NACC) for Architectural Glass & Metal (AG&M) contractors.

B. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions,

arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.

1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of aluminum-framed entrances and storefronts that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures, including, but not limited to, excessive deflection.
b. Noise or vibration created by wind and thermal and structural movements.
c. Water penetration through fixed glazing and framing areas.
d. Failure of operating components.

2. Warranty Period: Two years from date of Substantial Completion.

B. Special Finish Warranty, Anodized Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of anodized finishes within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested according to ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
c. Cracking, peeling, or chipping.

2. Warranty Period: Ten (10) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain all components of aluminum-framed entrance and storefront system, including framing and accessories, from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 Quality Requirements, to design aluminum-framed entrances and storefronts.

B. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.

1. Aluminum-framed entrances and storefronts shall withstand movements of supporting structure, including, but not limited to, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
2. Failure also includes the following:

a. Thermal stresses transferring to building structure.
b. Glass breakage.
c. Noise or vibration created by wind and thermal and structural movements.
d. Loosening or weakening of fasteners, attachments, and other components.
e. Failure of operating units.

C. Structural Loads:

1. Wind Loads: As indicated on Drawings.

D. Deflection of Framing Members Supporting Glass: At design wind load, as follows:

1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans of up to 13 feet 6 inches (4.1 m) and to 1/240 of clear span plus 1/4 inch (6.35 mm) for spans greater than 13 feet 6 inches (4.1 m).
2. Deflection Parallel to Glazing Plane: Limited to amount not exceeding that which reduces glazing bite to less than 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components to less than 1/8 inch (3.2 mm).

a. Operable Units: Provide a minimum 1/16-inch (1.6-mm) clearance between framing members and operable units.

E. Structural: Test according to ASTM E330/E330M as follows:

1. When tested at positive and negative wind-load design pressures, storefront assemblies, including entrance doors, do not evidence deflection exceeding specified limits.
2. When tested at 150 percent of positive and negative wind-load design pressures, storefront assemblies, including entrance doors and anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
3. Test Durations: As required by design wind velocity, but not less than 10 seconds.

F. Water Penetration under Static Pressure: Test according to ASTM E331 as follows:

1. No evidence of water penetration through fixed glazing and framing areas, including entrance doors, when tested according to a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 10 lbf/sq. ft. (480 Pa).

G. Energy Performance: Certified and labeled by manufacturer for energy performance as follows:

1. Thermal Transmittance (U-factor):

a. Fixed Glazing and Framing Areas: U-factor for the system of not more than 0.45 Btu/sq. ft. x h x deg F (2.55 W/sq. m x K) as determined according to NFRC 100.
b. Entrance Doors: U-factor of not more than 0.83 Btu/sq. ft. x h x deg F (4.71 W/sq. m x K) as determined according to NFRC 100.

2. Solar Heat-Gain Coefficient (SHGC):

a. Fixed Glazing and Framing Areas: SHGC for the system of not more than 0.45 as determined according to NFRC 200.
b. Entrance Doors: SHGC of not more than 0.45 as determined according to NFRC 200.

3. Air Leakage:

a. Fixed Glazing and Framing Areas: Air leakage for the system of not more than 0.06 cfm/sq. ft. (0.30 L/s per sq. m) at a static-air-pressure differential of 6.24 lbf/sq. ft. (300 Pa) when tested according to ASTM E283.
b. Entrance Doors: Air leakage of not more than 1.0 cfm/sq. ft. (5.08 L/s per sq. m) at a static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa).

4. Condensation Resistance Factor (CRF):

a. Fixed Glazing and Framing Areas: CRF for the system of not less than 55 as determined according to AAMA 1503.
b. Entrance Doors: CRF of not less than 57 as determined according to AAMA 1503.

H. Noise Reduction: Test according to ASTM E90, with ratings determined by ASTM E1332, as follows.

1. Outdoor-Indoor Transmission Class: Minimum 26.

I. Windborne-Debris Impact Resistance: Not Required.

J. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes.

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.3 STOREFRONT SYSTEMS

A. Basis of Design: “YES 45 TU Center Set” by YKK.

B. Basis of Design – Florida Product Approval Numbers: FL 12926.3 & 12926.4.

C. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.

1. Exterior Framing Construction: Thermally broken.
2. Glazing System: Retained mechanically with gaskets on four sides.
3. Glazing Plane: Center.
4. Finish: Clear anodic finish.
5. Fabrication Method: Field-fabricated stick system.

6. Curved Installation: Provide hinged mullions, compatible track and accessories where indicated.
7. Cap and Covers: Provide caps and covers to conceal conduit and wiring for electrical systems.
8. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
9. Steel Reinforcement: As required by manufacturer.

D. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.

E. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

2.4 ENTRANCE DOOR SYSTEMS

A. Basis of Design: “35D” by YKK.

B. Basis of Design – Florida Product Approval Number: FL 12892.1.

C. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing or automatic operation.

1. Door Construction: 1-3/4-inch (44.5-mm) overall thickness, with minimum 0.125-inch- (3.2-mm-) thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
2. Door Design: Medium stile; 3-1/2-inch (88.9-mm) nominal width.
3. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.

    a. Provide nonremovable glazing stops on outside of door.

4. Finish: Match adjacent storefront framing finish.

2.5 ENTRANCE DOOR HARDWARE

A. Entrance Door Hardware: Hardware not specified in this Section is specified in Section 087100 Door Hardware.

B. General: Provide entrance door hardware to comply with requirements in this Section.

1. Entrance Door Hardware Sets: Provide quantity, item, size, finish or color indicated.
2. Opening-Force Requirements:

    a. Egress Doors: Not more than 15 lbf (67 N) to release the latch and not more than 30 lbf (133 N) to set the door in motion and not more than 15 lbf (67 N) to open the door to its minimum required width.

C. Designations: Requirements for design, grade, function, finish, quantity, size, and other distinctive qualities of each type of entrance door hardware are indicated herein. Products are identified by using entrance door hardware designations by one or both of the two methods as follows:

1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements.
2. References to BHMA Standards: Provide products complying with these standards and requirements for description, quality, and function.

D. Continuous-Gear Hinges: BHMA A156.26.

E. Pulls:

1. Basis of Design: “AP Smart Series Pull” by YKK.
2. Pull Style: Offset.
3. Pull Size: 9-inches center to center.

F. Panic Exit Devices: BHMA A156.3, Grade 1, listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.

1. Basis of Design: “3690 Concealed Vertical Rod” by First Choice Building Products.

G. Cylinders:

1. As specified in Section 087100 Door Hardware.
2. BHMA A156.5, Grade 1.

H. Strikes: Provide strike with black-plastic dust box for each latch or lock bolt; fabricated for aluminum framing.

I. Operating Trim: BHMA A156.6.

J. Removable Mullions: BHMA A156.3 extruded aluminum.

1. When used with panic exit devices, provide removable mullions listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305. Use only mullions that have been tested with exit devices to be used.

2. Whether or not removable mullions are required for specified exit devices, provide mullions for enhanced security and to deter rain-water intrusion through meeting stiles of pairs of doors.

K. Closers: BHMA A156.4, Grade 1, with accessories required for a complete installation, sized as required by door size, exposure to weather, and anticipated frequency of use; adjustable to comply with field conditions and requirements for opening force.

1. Basis of Design: “UNI4410 689” by Yale.
2. Include plates, brackets and spacers required for proper closer operation.

L. Door Stops: BHMA A156.16, Grade 1, floor mounted, as appropriate for door location indicated, with integral rubber bumper.

M. Weather Stripping: Manufacturer's heaviest-duty (type for impact rated doors) replaceable components.

1. Compression Type: Made of ASTM D2000 molded neoprene or ASTM D2287 molded PVC.

2. Sliding Type: AAMA 701/702, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.

N. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip.

O. Thresholds: BHMA A156.21 raised accessible thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch (12.7 mm).

2.6 GLAZING

A. Glazing: Comply with Section 088000 Glazing.

B. Insulating Glass Units: ASTM E2190.

1. Glass: ASTM C1036, Type 1, Class 1, q3.

a. Tint: Gray.
b. Kind: Fully tempered where indicted on Drawings.

2. Lites: Two.
3. Filling: Fill space between lites with argon.
4. Low-E Coating: Sputtered on second surface.
5. Basis of Design – Low-E Coating: “SunGuard” SN 68” by Guardian SunGuard.

C. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing system of black, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers.

D. Glazing Sealants: As recommended by manufacturer.

2.7 MATERIALS

A. Sheet and Plate: ASTM B209 (ASTM B209M).

B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B221 (ASTM B221M).

C. Structural Profiles: ASTM B308/B308M.

D. Steel Reinforcement:

1. Structural Shapes, Plates, and Bars: ASTM A36/A36M.
2. Cold-Rolled Sheet and Strip: ASTM A1008/A1008M.
3. Hot-Rolled Sheet and Strip: ASTM A1011/A1011M.

E. Steel Reinforcement Primer: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM, and prepare surfaces according to applicable SSPC standard.

2.8 ACCESSORIES

A. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, non-staining, nonbleeding fasteners and accessories compatible with adjacent materials.

1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
2. Reinforce members as required to receive fastener threads.

B. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch (25.4 mm) that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.

1. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A123/A123M or ASTM A153/A153M requirements.

C. Concealed Flashing: Manufacturer's standard corrosion-resistant, non-staining, nonbleeding flashing compatible with adjacent materials.

D. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30-mil (0.762-mm) thickness per coat.

E. Rigid PVC Filler.

2.9 FABRICATION

A. Form or extrude aluminum shapes before finishing.

B. Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints with ends coped or mitered.
3. Physical and thermal isolation of glazing from framing members.
4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
5. Provisions for field replacement of glazing from interior.
6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

C. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

D. Storefront Framing: Fabricate components for assembly using screw-spline system.

E. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.

1. At exterior doors, provide compression weather stripping at fixed stops.

F. Entrance Doors: Reinforce doors as required for installing entrance door hardware.

1. At pairs of exterior doors, provide sliding-type weather stripping retained in adjustable strip and mortised into door edge.
2. At exterior doors, provide weather sweeps applied to door bottoms.

G. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.

H. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.10 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

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

3.2 INSTALLATION, GENERAL

A. Comply with manufacturer's written instructions.

B. Do not install damaged components.

C. Fit joints to produce hairline joints free of burrs and distortion.

D. Rigidly secure nonmovement joints.

E. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.

F. Seal perimeter and other joints watertight unless otherwise indicated.

G. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

H. If recommended by manufacturer, set continuous sill members and flashing in full sealant bed, as specified in Section 079200 Joint Sealants, to produce weathertight installation.

I. Install joint filler behind sealant as recommended by sealant manufacturer.

J. Install components plumb and true in alignment with established lines and grades.

3.3 INSTALLATION OF GLAZING

A. Install glazing as specified in Section 088000 Glazing.

3.4 INSTALLATION OF ALUMINUM-FRAMED ENTRANCE DOORS

A. Install entrance doors to produce smooth operation and tight fit at contact points.

1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
2. Field-Installed Entrance Door Hardware: Install surface-mounted door hardware according to door hardware manufacturers' written instructions using concealed fasteners unless otherwise indicated.

3.5 ERECTION TOLERANCES

A. Install aluminum-framed entrances and storefronts to comply with the following maximum tolerances:

1. Plumb: 1/8 inch in 10 feet (3.2 mm in 3 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
2. Level: 1/8 inch in 20 feet (3.2 mm in 6 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
3. Alignment:

    a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch (12.7 mm) wide, limit offset from true alignment to 1/16 inch (1.6 mm).
    b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch (12.7 to 25.4 mm) wide, limit offset from true alignment to 1/8 inch (3.2 mm).
    c. Where surfaces are separated by reveal or protruding element of 1 inch (25.4 mm) wide or more, limit offset from true alignment to 1/4 inch (6 mm).

4. Location: Limit variation from plane to 1/8 inch in 12 feet (3.2 mm in 3.6 m); 1/2 inch (12.7 mm) over total length.

3.6 MAINTENANCE SERVICE

A. Entrance Door Hardware Maintenance:

1. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of entrance door hardware.

END OF SECTION 084113

SECTION 085113 - ALUMINUM WINDOWS

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 aluminum windows for exterior locations.

B. Related Requirements:

1. Section 084113 Aluminum-Framed Entrances and Storefronts for coordinating finish among aluminum fenestration units.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review and discuss the finishing of aluminum windows that is required to be coordinated with the finishing of other aluminum work for color and finish matching.
3. Review, discuss, and coordinate the interrelationship of aluminum windows with other exterior wall components. Include provisions for anchoring, flashing, weeping, sealing perimeters, and protecting finishes.
4. Review and discuss the sequence of work required to construct a watertight and weathertight exterior building envelope.
5. Inspect and discuss the condition of substrate and other preparatory work performed by other trades.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, glazing and fabrication methods, dimensions of individual components and profiles, hardware, and finishes for aluminum windows.

B. Shop Drawings: For aluminum windows.

1. Include plans, elevations, sections, hardware, accessories, insect screens, operational clearances, and details of installation, including anchor, flashing, and sealant installation.

C. Samples: For each exposed product and for each color specified, 2 by 4 inches (50 by 100 mm) in size.

D. Product Schedule: For aluminum windows. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer and Installer.

B. Product Test Reports: For each type of aluminum window, for tests performed by a qualified testing agency.

C. Florida Product Approval for window assemblies.

D. Sample Warranties: For manufacturer's warranties.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: A manufacturer capable of fabricating aluminum windows that meet or exceed performance requirements indicated and of documenting this performance by test reports and calculations.

B. Installer Qualifications: An installer acceptable to aluminum window manufacturer for installation of units required for this Project.

1.7 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace aluminum windows that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Failure to meet performance requirements.
b. Structural failures including excessive deflection, water leakage, condensation, and air infiltration.
c. Faulty operation of movable sash and hardware.
d. Deterioration of materials and finishes beyond normal weathering.
e. Failure of insulating glass.

2. Warranty Period:

a. Window: Two (2) years from date of Substantial Completion.
b. Glazing Units: Ten (10) years from date of Substantial Completion.
c. Aluminum Finish: Twenty (20) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain aluminum windows from single source from single manufacturer.

2.2 WINDOW PERFORMANCE REQUIREMENTS

A. Product Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 for definitions and minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.

1. Window Certification: AAMA certified with label attached to each window.

B. Performance Class and Grade: AAMA/WDMA/CSA 101/I.S.2/A440 as follows:

1. Minimum Performance Class: AW.
2. Minimum Performance Grade: 50.

C. Thermal Transmittance: NFRC 100 maximum whole-window U-factor of 0.60 Btu/sq. ft. x h x deg F (3.43 W/sq. m x K).

D. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum whole-window SHGC of 0.27.

E. Condensation-Resistance Factor (CRF): Provide aluminum windows tested for thermal performance according to AAMA 1503, showing a CRF of 45.

F. Thermal Movements: Provide aluminum windows, including anchorage, that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: 120 deg F (67 deg C) ambient; 180 deg F (100 deg C) material surfaces.

G. Sound Transmission Class (STC): Rated for not less than 30 STC when tested for laboratory sound transmission loss according to ASTM E90 and determined by ASTM E413.

H. Outside-Inside Transmission Class (OITC): Rated for not less than 30 OITC when tested for laboratory sound transmission loss according to ASTM E90 and determined by ASTM E1332.

I. Windborne-Debris Impact Resistance: Not required.

2.3 ALUMINUM WINDOWS

A. Basis of Design – Single Hung: “YVS 410 TU Thermally Broken Hung Window” by YKK.

B. Basis of Design – Single Hung – Florida Product Approval Numbers: FL 12878.1 & 12878.2.

C. Types: Provide the following types in locations indicated on Drawings:

1. Single hung.

D. Frames and Sashes: Aluminum extrusions complying with AAMA/WDMA/CSA 101/I.S.2/A440.

1. Thermally Improved Construction: Fabricate frames, sashes, and muntins with an integral, concealed, low-conductance thermal barrier located between exterior materials and window members exposed on interior side in a manner that eliminates direct metal-to-metal contact.

E. Insulating-Glass Units: ASTM E2190.

1. Glass: ASTM C1036, Type 1, Class 1, q3.

a. Tint: Gray.
b. Kind: Fully tempered where indicated on Drawings.

2. Lites: Two.
3. Filling: Fill space between glass lites with argon.
4. Low-E Coating: Sputtered on second surface.
5. Basis of Design – Low-E Coating: “SunGuard SN 68” by Guardian SunGuard.

F. Hardware, General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, carbon steel complying with AAMA 907, or other corrosion-resistant material compatible with adjacent materials; designed to smoothly operate, tightly close, and securely lock windows, and sized to accommodate sash weight and dimensions.

1. Exposed Hardware Color and Finish: As selected by Architect from manufacturer's full range.

G. Hung Window Hardware:

1. Counterbalancing Mechanism: Complying with AAMA 902, concealed, of size and capacity to hold sash stationary at any open position.
2. Locks and Latches: Allow unobstructed movement of the sash across adjacent sash in direction indicated and operated from the inside only. Provide stops in lift bar to prohibit removal of latches.
3. Tilt Latch: Releasing latch allows sash to pivot about horizontal axis to facilitate cleaning exterior surfaces from the interior.

H. Weather Stripping: Provide full-perimeter weather stripping for each operable sash unless otherwise indicated.

I. Fasteners: Noncorrosive and compatible with window members, trim, hardware, anchors, and other components.

1. Exposed Fasteners: Do not use exposed fasteners to greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.

2.4 ACCESSORIES

A. Dividers (False Muntins): Provide extruded-aluminum divider grilles in designs indicated for each sash lite.

1. Type: Permanently located at exterior lite.
2. Pattern: As indicated on Drawings.
3. Profile: As selected by Architect from manufacturer's full range.

B. Receptor System and/or Clip System: Two-piece, snap-together, thermally broken, extruded-aluminum receptor system that anchors windows in place. Receptor System and/or Clip System used shall be Florida Product Approved. and finishes shall match window system.

2.5 INSECT SCREENS

A. Not required.

2.6 FABRICATION

A. Fabricate aluminum windows in sizes indicated. Include a complete system for assembling components and anchoring windows.

B. Glaze aluminum windows in the factory.

C. Weather strip each operable sash to provide weathertight installation.

D. Weep Holes: Provide weep holes and internal passages to conduct infiltrating water to exterior.

E. Mullions: Provide mullions and cover plates, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections. Provide mullions and cover plates capable of withstanding design wind loads of window units.

F. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation.

2.7 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.8 ALUMINUM FINISHES

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. Class I, Clear Anodic Finish: AA-M12C22A41 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Verify rough opening dimensions, levelness of sill plate, and operational clearances.

C. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure weathertight window installation.

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

3.2 INSTALLATION

A. Comply with manufacturer's written instructions for installing windows, hardware, accessories, and other components. For installation procedures and requirements not addressed in manufacturer's written instructions, comply with installation requirements in ASTM E2112.

B. Install windows level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction to produce weathertight construction.

C. Install windows and components to drain condensation, water penetrating joints, and moisture migrating within windows to the exterior.

D. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.3 ADJUSTING, CLEANING, AND PROTECTION

A. Adjust operating sashes and hardware for a tight fit at contact points and weather stripping for smooth operation and weathertight closure.

B. Clean exposed surfaces immediately after installing windows. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.

1. Keep protective films and coverings in place until final cleaning.

C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

D. Protect window surfaces from contact with contaminating substances resulting from construction operations. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written instructions.

END OF SECTION 085113

SECTION 087100 - DOOR HARDWARE

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. Mechanical door hardware for the following:

a. Swinging doors.

2. Cylinders for door hardware specified in other Sections.

B. Related Requirements:

1. Section 081113 Hollow Metal Doors and Frames for items provided with metal doors and frames.
2. Section 081416 Flush Wood Doors for items provided with wood doors.
3. Section 084113 Aluminum-Framed Entrances and Storefronts for entrance door hardware, except closers, stops, cylinders and operators.

1.3 COORDINATION

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

B. Security: Coordinate installation of door hardware, keying, and access control with Owner's locksmith and/or security consultant.

C. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

B. Keying Conference: Conduct conference at Project site.

1. Conference participants shall include Installer's Architectural Hardware Consultant and Owner's locksmith and/or security consultant.
2. Incorporate conference decisions into keying schedule after reviewing door hardware keying system including, but not limited to, the following:

    a. Preliminary key system schematic diagram.
    b. Requirements for key control system.
    c. Requirements for access control.
    d. Address for delivery of keys.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant. Coordinate door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

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 the fabrication of other work that is critical in Project construction schedule.
2. Format: Use same scheduling sequence and format and use same door numbers as in door hardware schedule in the Contract Documents.
3. Content: Include the following information:

    a. Identification number, location, hand, fire rating, size, and material of each door and frame.
    b. Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
    c. Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
    d. Fastenings and other installation information.
    e. Explanation of abbreviations, symbols, and designations contained in door hardware schedule.
    f. Mounting locations for door hardware.
    g. List of related door devices specified in other Sections for each door and frame.

C. Keying Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents. Provide bitting list for keyed cylinders and locksets.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of door hardware to include in maintenance manuals.

B. Schedules: Final door hardware and keying schedule.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and of an Architectural Hardware Consultant who is available during the course of the Work to consult Contractor, Architect, and Owner about door hardware and keying.

1. Warehousing Facilities: In Project's vicinity.
2. Scheduling Responsibility: Preparation of door hardware and keying schedule.

B. Architectural Hardware Consultant Qualifications: A person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and who is currently certified by DHI as an Architectural Hardware Consultant (AHC).

1.9 DELIVERY, STORAGE, AND HANDLING

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

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

C. Deliver keys to Owner in person.

1.10 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including excessive deflection, cracking, or breakage.
b. Faulty operation of doors and door hardware.
c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

2. Warranty Period: Three years from date of Substantial Completion unless otherwise indicated below:

a. Exit Devices: Two years from date of Substantial Completion.
b. Automatic Door Operators: Two years from date of Substantial Completion.
c. Wireless Switches for Door Operators: Two years from date of Substantial Completion.
d. Manual Closers: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain each type of door hardware from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Rated Door Assemblies: Where fire-rated doors are indicated, provide door hardware complying with NFPA 80 that is listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.

B. Smoke and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that complies with requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.

1. Air Leakage Rate: Maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at the tested pressure differential of 0.3-inch wg (75 Pa) of water.

C. Means of Egress Doors: Latches do not require more than 15 lbf (67 N) to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.

D. Accessibility Requirements: For door hardware on doors in an accessible route, comply with Florida Building Code – Accessibility (Seventh Edition).

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf (22.2 N).
2. Comply with the following maximum opening-force requirements:

a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
b. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch (13 mm) high.
4. Adjust door closer sweep periods so that, from an open position of 90 degrees, the door will take at least 5 seconds to move to a position of 12 degrees from the latch.

2.3 HINGES

A. Hinges: BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.

1. Basis of Design Manufacturer: McKinney.

2.4 MECHANICAL LOCKS AND LATCHES

A. Lock Functions: As indicated in door hardware schedule.

B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:

1. Bored Locks: Minimum 1/2-inch (13-mm) latchbolt throw.
2. Mortise Locks: Minimum 3/4-inch (19-mm) latchbolt throw.
3. Deadbolts: Minimum 1-inch (25-mm) bolt throw.

C. Lock Backset: 2-3/4 inches (70 mm) unless otherwise indicated.

D. Lock Trim:

1. Basis of Design – Mortise Locksets: “Augusta (AUR)” by Assa Abloy | Yale.
2. Basis of Design – Bored Locksets: “Augusta (AU)” by Assa Abloy | Yale.
3. Levers: Cast.
4. Escutcheons (Roses) – Mortise Locksets: Stamped.
5. Escutcheons (Roses) – Bored Locksets: Wrought.
6. Dummy Trim: Match lever lock trim and escutcheons.

E. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.

F. Bored Locks: BHMA A156.2; Grade 1; Series 4000.

1. Basis of Design Manufacturer: Assa Abloy | Yale.
2. Substitutions for Bored Locks: Not Allowed.

G. Mortise Locks: BHMA A156.13; Operational Grade 1; stamped steel case with steel or brass parts; Series 1000.

1. Basis of Design Manufacturer: Assa Abloy | Yale.
2. Substitutions for Mortise Locks: Not Allowed.

2.5 EXIT DEVICES AND AUXILIARY ITEMS

A. Exit Devices and Auxiliary Items: BHMA A156.3.

1. Basis of Design Manufacturer: First Choice Building Products. Refer to Section 084113 “Aluminum-Framed Entrances and Storefronts.”

2.6 LOCK CYLINDERS

A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver. Finishes shall match finishes of hardware where cylinder is installed. Cylinder collars shall be solid and allow faces of cylinders to be set flush with adjacent surface where cylinder is installed.

1. Basis of Design Manufacturer: Assa Abloy | Yale
2. Basis of Design – Rim Devices: "1109" with "YA" keyway and required recessed collar.
3. Basis of Design – Mortise Devices: "2153" with "YA" keyway and required recessed collar.
4. Pins: Six (6).
5. Substitutions for Lock Cylinders: Not allowed.

B. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide construction master keys in quantity required by Contractor.

2.7 KEYING

A. Keying General: Lock cylinders to be provided by Contractor and keyed to Owner's specifications by cylinder manufacturer ("factory keyed").

B. Keying System: Factory registered, complying with guidelines in BHMA A156.28, appendix. Incorporate decisions made in keying conference.

1. Grand Master Key System: Change keys, a master key, and a grand master key operate cylinders.

a. Provide two (2) Grand Master Keys.

b. Provide twenty (20) Master Keys.

c. Provide one hundred (100) total combination of change keys and blanks for each cylinder as follows:

1) For bittings with up to five (5) cylinders, provide four (4) cut keys and ninety-six (96) blanks.
2) For bittings with more than five (>5) to fifteen (15) cylinders, provide twenty (20) cut keys and eighty (80) blanks.
3) For bittings with more than fifteen (>15) cylinders, provide fifty (50) cut keys and fifty (50) blanks.

2. Existing System:

a. Master key and grand master key locks to Owner's existing system.
b. Owner's existing keyway: "GMKB-VYZ" by Assa Abloy | Yale.

3. Keyed Alike: Key all cylinders to same change key. Owner reserves right to specify up to three openings per new building to have unique keying. Owner will exercise right prior to or during keying conference.

C. Keys: Nickel silver, large bow.

1. Stamping: Permanently inscribe each key with a visual key control number, bitting number (if different than key control number) and include the following notation:

    a. Notation: "DO NOT DUPLICATE."

2.8 KEY CONTROL SYSTEM

A. Key Control Cabinet: Key Cabinet is existing. Keys provided shall be compatible with existing cabinet. Contractor to coordinate with Owner at keying conference.

2.9 SURFACE CLOSERS

A. Surface Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written instructions for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

1. Basis of Design Manufacturer: Assa Abloy | Yale.

2.10 MECHANICAL STOPS AND HOLDERS

A. Wall- and Floor-Mounted Stops: BHMA A156.16.

1. Basis of Design Manufacturer: Assa Abloy | Rockwood.

2.11 DOOR GASKETING

A. Door Gasketing: BHMA A156.22; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.

1. Basis of Design Manufacturer: Assa Abloy | Pemko.

B. Maximum Air Leakage: When tested according to ASTM E283 with tested pressure differential of 0.3-inch wg (75 Pa), as follows:

1. Smoke-Rated Gasketing: 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) of door opening.
2. Gasketing on Single Doors: 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) of door opening.
3. Gasketing on Double Doors: 0.50 cfm per ft. (0.000774 cu.) m/s per m) of door opening.

2.12 THRESHOLDS

A. Thresholds: BHMA A156.21; fabricated to full width of opening indicated.

1. Basis of Design Manufacturer: Assa Abloy | Pemko.

2.13 METAL PROTECTIVE TRIM UNITS

A. Metal Protective Trim Units: BHMA A156.6; fabricated from 0.062 inch (1.5 mm) thick stainless steel; with manufacturer's standard machine or self-tapping screw fasteners.

1. Basis of Design Manufacturer – Door Kick and Mop Plates: Assa Abloy | Rockwood.

2.14 AUXILIARY DOOR HARDWARE

A. Auxiliary Hardware: BHMA A156.16.

1. Basis of Design Manufacturers: Assa Abloy | Rockwood, Assa Abloy | Pemko.

2.15 AUTOMATIC DOOR OPERATORS

A. Automatic Door Operator: BHMA A156.10; BHMA A156.19, UL.

1. Basis of Design – Operators: SW200i by Assa Abloy.
2. Basis of Design – Wireless Switches: Energy Switch TX by Optex.
3. Provide complete systems including all required receivers, mounting hardware and accessories.
4. Dual egress operators shall be capable of operating pairs of doors simultaneously.
5. Operators to be mounted on interior side of exterior door frames.
6. Provide battery-free, wireless push buttons / push plates.
7. Provide round push buttons/push plates for mounting on walls.
8. Provide vertically oriented rectangular push buttons/push plates for mounting on walkway columns.
9. Provide caution signage indicating presence of automatic door operators and accessibility symbols.
10. Confirm locations of all push buttons and decals/signage with Architect prior to installation.
11. Operators shall have manual on / off switch.

2.16 FABRICATION

A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rating labels and as otherwise approved by Architect.

1. Manufacturer's identification is permitted on rim of lock cylinders only.

B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.

C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware unless otherwise indicated.

1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where

bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.

a. Exception: Closers shall be installed using sex / sleeve nuts and bolts.

2. Fire-Rated Applications:

a. Wood or Machine Screws: For the following:

1) Hinges mortised to doors or frames; use threaded-to-the-head wood screws for wood doors and frames.
2) Strike plates to frames.

b. Steel Through Bolts: For the following unless door blocking is provided:

1) Closers to doors and frames.
2) Surface-mounted exit devices.

3. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
4. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.17 FINISHES

A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. 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 of the Work.

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

3.2 PREPARATION

A. Steel Doors and Frames: For surface-applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.

B. Wood Doors: Comply with door and hardware manufacturers' written instructions.

3.3 INSTALLATION

A. Mounting Heights: 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. Wood Doors: DHI's "Recommended Locations for Architectural Hardware for Wood Flush Doors."

B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.

1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

C. Hinges: Install types and in quantities indicated in door hardware schedule, but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches (750 mm) of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

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

1. Replace construction cores with permanent cores as indicated in keying schedule.

E. Key Control System:

1. Key Control Cabinet: Tag keys and place them on markers and hooks in existing key control system cabinet. Contractor to coordinate with Owner at keying conference.

F. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 079200 Joint Sealants.

G. 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 will impede traffic.

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

1. Do not notch perimeter gasketing to install other surface-applied hardware.

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

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

3.4 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

3.5 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 that door hardware is without damage or deterioration at time of Substantial Completion.

3.6 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

3.7 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain door hardware.

3.8 DOOR HARDWARE SCHEDULE

A. Hardware Sets are indicated herein.

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SET 1.0

Exterior / Aluminum Storefront / Pair / Exit Device / Night Latch / Pull / Closer

Qty	Pair	Active / Inactive	Item	Mfr	Model	Size	Finish	Comments
2			Continuous Geared Hinges	YKK				Refer to Section 084113
2			Integral Mid-panel Concealed Rod Exit Devices	FCBP				Refer to Section 084113
2			Offset Pulls	YKK				Refer to Section 084113
2			Closers	Yale	UNI4410		689	Parallel Arm
set			Weatherstripping	YKK				Refer to Section 084113
1			Threshold	YKK				Refer to Section 084113
1			Removable Security Mullion	YKK				Refer to Section 084113
2			Stops	Rockwood	462	2" x 1-1/2"	2C	Floor
2			Cylinders - Exit Devices	Yale	1109	6 Pin	32D	
2			Cylinders - Dogging	Yale	2153	6 Pin	32D	

SET 2.0

Exterior / Aluminum Storefront / Pair / Exit Device / Night Latch / Pull / Door Operator

Qty	Pair	Active / Inactive	Item	Mfr	Model	Size	Finish	Comments
2			Continuous Geared Hinges	YKK				Refer to Section 084113
2			Integral Mid-panel Concealed Rod Exit Devices	FCBP				Refer to Section 084113
2			Offset Pulls	YKK				Refer to Section 084113
set			Weatherstripping	YKK				Refer to Section 084113
1			Threshold	YKK				Refer to Section 084113
1			Removable Security Mullion	YKK				Refer to Section 084113
2			Stops	Rockwood	462	2" x 1-1/2"	2C	Floor
2			Cylinders - Exit Devices	Yale	1109	6 Pin	32D	
2			Cylinders - Dogging	Yale	2153	6 Pin	32D	
1			Automatic Operator	Assa Abloy	SW200i	Pair	Anodized	Dual Egress
1			Push Button	Optex	NRG-TX	6RHSS		For Interior
1			Push Button	Optex	NRG-TX	JHSS		For Exterior

SET 3.0

Exterior / Aluminum Storefront / Single / Exit Device / Night Latch / Pull / Door Operator

Qty	Pair	Active / Inactive	Item	Mfr	Model	Size	Finish	Comments
1			Continuous Geared Hinges	YKK				Refer to Section 084113
1			Integral Mid-panel Concealed Rod Exit Device	FCBP				Refer to Section 084113
1			Offset Pull	YKK				Refer to Section 084113
1			Closer	Yale	UNI4410		689	Parallel Arm
set			Weatherstripping	YKK				Refer to Section 084113
1			Threshold	YKK				Refer to Section 084113
1			Stop	Rockwood	462	2" x 1-1/2"	2C	Floor
1			Cylinder - Exit Device	Yale	1109	6 Pin	32D	
1			Cylinder - Dogging	Yale	2153	6 Pin	32D	
1			Automatic Operator	Assa Abloy	SW200i	Single	Anodized	
1			Push Buttons	Optex	NRG-TX	6RHSS		For Interior
1			Push Button	Optex	NRG-TX	JHSS		For Exterior

SET 4.0

Exterior / Metal / Single / Mortise Lockset / Storeroom Function / Lever / Closer

Qty	Pair	Active / Inactive	Item	Mfr	Model	Size	Finish	Comments
1-1/2	Pair		Butts	McKinney	T4B3386	4-1/2" x 4-1/2"	32D	Non-removable Pins
1			Lockset	Yale	AUR8805FL		32D	
1			Closer	Yale	4430 TBGN		689	Parallel Arm
set			Weatherstripping	Pemko	303CS	LAR	Clear Anodized	Head and jambs
6			Door Bottom	Rockwood	608		Gray	3 per jamb
1			Threshold	Pemko	151A	3" x LAR	Aluminum	Set in full bed of sealant
1			Stop	Rockwood	462	2" x 1-1/2"	2C	Floor
1			Kick Plate	Rockwood	K1062 CSK	8" x 34" x .062"	32D	Push Side
1			Rain Drip Cap	Pemko	346C	LAR	Clear Anodized	

SET 5.0

Interior / Metal / Single / Cylindrical Lockset / Storeroom Function / Lever / Closer / Smoke Rated

Qty	Pair	Active / Inactive	Item	Mfr	Model	Size	Finish	Comments
1-1/2	Pair		Butts	McKinney	TB2714	4-1/2" x 4-1/2"	26D	
1			Lockset	Yale	AU5405LN		26D	
1			Closer	Yale	4430 TBGN		689	Parallel Arm
1			Silencers	Rockwood	608		Gray	3 per jamb
set			Smoke Seals	Pemko	S773D	LAR	Dark Brown	Head and jambs
1			Stop	Rockwood	409	2-1/2" dia x 3/4"	32D	Wall
1			Kick Plate	Rockwood	K1062 CSK	8" x 34" x .062"	32D	Push Side

SET 6.0
Not Used

SET 7.0
Interior / Metal / Single / Cylindrical Lockset / Storeroom Function / Lever / Closer / Smoke Rated

Qty	Pair	Active / Inactive	Item	Mfr	Model	Size	Finish	Comments
1-1/2	Pair		Butts	McKinney	TB2714	4-1/2" x 4-1/2"	26D	
1			Lockset	Yale	AU5405LN		26D	
1			Closer	Yale	4430 TBGN		689	Parallel Arm
6			Silencers	Rockwood	608		Gray	3 per jamb
set			Smoke Seals	Pemko	S773D	LAR	Dark Brown	Head and jambs
1			Stop (Doors 12 & 18)	Rockwood	409	2-1/2" dia x 3/4"	32D	Wall
1			Stop (Doors 2, 47 & 50)	Rockwood	462	2" dia x 1-1/2"	2C	Floor
1			Kick Plate	Rockwood	K1062 CSK	8" x 34" x .062"	32D	Push Side
1			Threshold (Doors 2 & 47 Only)	Pemko	227A	4" x LAR	Aluminum	Center under door

SET 8.0
Not Used

SET 9.0
Interior / Metal / Single / Cylindrical Lockset / Classroom PB Function / Lever

Qty	Pair	Active / Inactive	Item	Mfr	Model	Size	Finish	Comments
1-1/2	Pair		Butts	McKinney	TA2714	4-1/2" x 4-1/2"	26D	
1			Lockset	Yale	AU5407LN		26D	
6			Silencers	Rockwood	608		Gray	3 per jamb
1			Kick Plate	Rockwood	K1062 CSK	8" x 34" x .062"	32D	Push Side
1			Stop	Rockwood	409	2-1/2" dia x 3/4"	32D	Wall

SET 10.0
Interior / Metal / Single / Cylindrical Lockset / Storeroom Function / Lever / Closer

Qty	Pair	Active / Inactive	Item	Mfr	Model	Size	Finish	Comments
1-1/2	Pair		Butts	McKinney	TB2714	4-1/2" x 4-1/2"	26D	
1			Lockset	Yale	AU5405LN		26D	
1			Closer	Yale	4430T TBGN		689	Hold Open / Parallel Arm
6			Silencers	Rockwood	608		Gray	3 per jamb
1			Stop	Rockwood	409	2-1/2" dia x 3/4"	32D	Wall
1			Kick Plate	Rockwood	K1062 CSK	8" x 34" x .062"	32D	Push Side

SET 11.0
Interior / Metal / Single / Cylindrical Lockset / Privacy Function / Lever / Closer

Qty	Pair	Active / Inactive	Item	Mfr	Model	Size	Finish	Comments
1-1/2	Pair		Butts	McKinney	TB2714	4-1/2" x 4-1/2"	26D	
1			Lockset	Yale	AU5402LN		26D	
1			Closer	Yale	4430T TBGN		689	Hold Open / Parallel Arm
6			Silencers	Rockwood	608		Gray	3 per jamb
1			Stop	Rockwood	462	2" dia x 1-1/2"	2C	Floor
1			Marble Saddle	-	-	LAR	-	By Tile Installer
1			Kick Plate	Rockwood	K1062 CSK	8" x 34" x .062"	32D	Push Side
1			Mop Plate	Rockwood	K1062 CSK	4" x 35" x .062"	32D	Pull Side

SET 12.0
Not Used

SET 13.0
Interior / Metal / Cased Opening

Qty	Pair	Active / Inactive	Item	Mfr	Model	Size	Finish	Comments
			Marble Saddle			LAR		By Tile Installer

END OF SECTION 087100

SECTION 088000 - GLAZING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Glass products – general requirements.
2. Glass products – for interior door vision panels.
3. Miscellaneous glazing materials.
4. Miscellaneous glazing accessories.

B. Related Requirements:

1. Section 084113 Aluminum-Framed Entrances and Storefronts for glazing of those items.
2. Section 085113 Aluminum Windows for glazing of those items.
3. Section 102800 Restroom Accessories for mirrors.

1.2 COORDINATION

A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances to achieve proper safety margins for glazing retention under each design load case, load case combination, and service condition.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Glass Samples: For each type of glass product other than clear monolithic vision glass; 12 inches (300 mm) square.

C. Delegated Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Product Certificates: For glass.

B. Product test reports.

C. Sample warranties.

1.6 QUALITY ASSURANCE

A. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C1021 to conduct the testing indicated.

1.7 WARRANTY

A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.

1. Warranty Period: 10 years from date of Substantial Completion.

B. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 Quality Requirements, to design glazing.

B. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined in accordance with the IBC and ASTM E1300:

1. Design Wind Pressures: As indicated on Drawings.
2. Thermal Loads: Design glazing to resist thermal stress breakage induced by differential temperature conditions and limited air circulation within individual glass lites and insulated glazing units.

C. Windborne-Debris-Impact Resistance: Not required.

D. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.

2.2 GLASS PRODUCTS, GENERAL

A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. NGA Publications: "Glazing Manual."
2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."

B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the IGCC.

D. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than thickness indicated.

E. Strength: Where annealed float glass is indicated, provide annealed float glass, heat-strengthened float glass, or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.3 GLASS PRODUCTS

A. Clear Annealed Float Glass: ASTM C1036, Type I, Class 1 (clear), Quality-Q3.

B. Tinted Annealed Float Glass: ASTM C1036, Type I, Class 2 (tinted), Quality-Q3.

C. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

D. Heat-Strengthened Float Glass: ASTM C1048, Kind HS (heat strengthened), Type I, Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

E. Reflective- and Low-E-Coated Vision Glass: ASTM C1376.

F. Ceramic-Coated Vision Glass: ASTM C1048, Condition C, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3; and complying with Specification No. 95-1-31 in NGA's "Engineering Standards Manual."

2.4 SAFETY GLASS

A. Safety Glass: Suitable for use in hazardous locations per Florida Building Code – Building (Seventh Edition) Section 2406. Permanent identification label visible on each lite after installation per FBC-B 2406.3.

1. Basis of Design: Fully tempered float glass.
2. Safety Testing: Impact safety rated per CPSC 16 CFR Part 1201 (Category II).
3. Fire Rating: None.
4. Thickness: 0.25 inches (6 mm) nominal.
5. Color: Clear.
6. Use: Non-fire rated interior doors and non-fire rated door frames.

B. Fire Rated Safety Glass: Listed and labeled with Underwriters Laboratories, Inc. (UL) or other approved testing, listing and labeling agency. Successfully tested in accordance with UL 9, UL 10B, UL 10C, NFPA 80, NFPA 252 and NFPA 257. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation. Suitable for use in hazardous locations per Florida Building Code – Building (Seventh Edition) Section 2406. Permanent identification label visible on each lite after installation per FBC-B 2406.3.

1. Basis of Design: “Pyroswiss 20” by Saint-Gobain Vetrotech.
2. Safety Testing: Impact safety rated per CPSC 16 CFR Part 1201 (Categories I & II), ANSI Z97.1.
3. Fire Rating: 20 minutes.
4. Thickness: 0.25 inches (6 mm) nominal per ASTM C1036.
5. Color: Clear.
6. Use: Fire rated interior doors and fire rated door frames (if any).

2.5 INSULATING GLASS

A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified in accordance with ASTM E2190.

1. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants.
2. Perimeter Spacer: Manufacturer's standard spacer material and construction.
3. Dessicant: Molecular sieve or silica gel, or a blend of both.
4. Use: Exterior non-fire rated hollow metal door frames.

2.6 GLAZING SEALANTS

A. General:

1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.

3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range of industry colors.

B. Neutral-Curing Silicone Glazing Sealant, Class 100/50: Complying with ASTM C920, Type S, Grade NS, Use NT.

2.7 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C1281 and AAMA 800 for products indicated below:

1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.

B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:

1. AAMA 810.1, Type 1, for glazing applications in which tape acts as primary sealant.
2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.8 MISCELLANEOUS GLAZING MATERIALS

A. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

B. Setting Blocks:

1. EPDM or Silicone with Shore A durometer hardness of 85, plus or minus 5.
2. Type recommended in writing by sealant or glass manufacturer.

C. Spacers:

1. Neoprene blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

D. Edge Blocks:

1. EPDM or Silicone with Shore A durometer hardness per manufacturer's written instructions.

PART 3 - EXECUTION

3.1 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.

C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

F. Provide spacers for glass lites where length plus width is larger than 50 inches (1270 mm).

G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and in accordance with requirements in referenced glazing publications.

3.2 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

3.3 GASKET GLAZING (DRY)

A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.

B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.

C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of

openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended in writing by gasket manufacturer.

D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended in writing by gasket manufacturer.

E. Install gaskets so they protrude past face of glazing stops.

3.4 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.5 CLEANING AND PROTECTION

A. Immediately after installation, remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.

1. If, despite such protection, contaminating substances do contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.

C. Remove and replace glass that is damaged during construction period.

END OF SECTION 088000

SECTION 089119 - FIXED LOUVERS

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. Fixed extruded-aluminum louvers.

1.3 DEFINITIONS

A. Louver Terminology: Definitions of terms for metal louvers contained in AMCA 501 apply to this Section unless otherwise defined in this Section or in referenced standards.

B. Horizontal Louver: Louver with horizontal blades (i.e., the axis of the blades are horizontal).

C. Vertical Louver: Louver with vertical blades (i.e., the axis of the blades are vertical).

D. Drainable-Blade Louver: Louver with blades having gutters that collect water and drain it to channels in jambs and mullions, which carry it to bottom of unit and away from opening.

E. Wind-Driven-Rain-Resistant Louver: Louver that provides specified wind-driven-rain performance, as determined by testing according to AMCA 500-L.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. For louvers specified to bear AMCA seal, include printed catalog pages showing specified models with appropriate AMCA Certified Ratings Seals.

B. Shop Drawings: For louvers and accessories. Include plans, elevations, sections, details, and attachments to other work. Show frame profiles and blade profiles, angles, and spacing.

1. Show weep paths, gaskets, flashings, sealants, and other means of preventing water intrusion.

C. Samples: For each type of metal finish required.

D. Delegated-Design Submittal: For louvers indicated to comply with structural performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Based on evaluation of comprehensive tests performed according to AMCA 500-L by a qualified testing agency or by manufacturer and witnessed by a qualified testing agency, for each type of louver and showing compliance with performance requirements specified.

B. Florida Product Approval.

C. Sample Warranties: For manufacturer's special warranties.

1.6 FIELD CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.7 WARRANTY

A. Special Finish Warranty: Manufacturer agrees to repair or replace components on which finishes fail in materials or workmanship within specified warranty period.

1. Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested according to ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain fixed louvers from single source from a single manufacturer where indicated to be of same type, design, or factory-applied color finish.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design louvers, including comprehensive engineering analysis by a qualified professional engineer, using structural performance requirements and design criteria indicated.

B. Structural Performance: Louvers shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated without permanent deformation of louver

components, noise or metal fatigue caused by louver-blade rattle or flutter, or permanent damage to fasteners and anchors. Wind pressures shall be considered to act normal to the face of the building.

1. Wind Loads: Determine loads based on pressures as indicated on Drawings.

C. Louver Performance Ratings: Provide louvers complying with requirements specified, as demonstrated by testing manufacturer's stock units identical to those provided, except for length and width according to AMCA 500-L.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

E. SMACNA Standard: Comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" for fabrication, construction details, and installation procedures.

2.3 FIXED EXTRUDED-ALUMINUM LOUVERS

A. Horizontal, Wind-Driven-Rain-Resistant Louver:

1. Basis of Design: “EHH-501X” by Greenheck.
2. Basis of Design – Florida Product Approval Number: FL 6876.2 & FL 15718.2.
3. Louver Depth: 5 inches (127 mm).
4. Frame and Blade Nominal Thickness: Not less than 0.080 inch (2.03 mm).
5. Louver Performance Ratings:

    a. Free Area: Not less than 5.0 sq. ft. (0.46 sq. m) for 48-inch- (1220-mm-) wide by 48-inch- (1220-mm-) high louver.
    b. Air Performance: Not more than 0.10-inch wg (25-Pa) static pressure drop at 600-fpm (3.0-m/s) free-area exhaust velocity.
    c. Wind-Driven Rain Performance: Not less than 99 percent effectiveness when subjected to a rainfall rate of 8 inches (200 mm) per hour and a wind speed of 50 mph (22.4 m/s) at a core-area intake velocity of 400 fpm (2.0 m/s).

6. AMCA Seal: Mark units with AMCA Certified Ratings Seal.
7. Bird and Insect Screen: Interior face of louver.
8. Shapes: Rectangular and Square.
9. Louver Schedule: Included at end of Section.

B. Vertical, Wind-Driven-Rain-Resistant Louver:

1. Basis of Design: “EME5625D” by Ruskin.
2. Basis of Design – Florida Product Approval Number: FL 21829.6.
3. Louver Depth: 5 inches (127 mm).
4. Frame and Blade Nominal Thickness: Not less than 0.095 inch (2.4 mm).
5. Louver Performance Ratings:

a. Free Area: Not less than 5.0 sq. ft. (0.46 sq. m) for 48-inch- (1220-mm-) wide by 48-inch- (1220-mm-) high louver.
b. Air Performance: Not more than 0.10-inch wg (25-Pa) static pressure drop at 600-fpm (3.0-m/s) free-area exhaust velocity.
c. Wind-Driven Rain Performance: Not less than 99 percent effectiveness when subjected to a rainfall rate of 8 inches (200 mm) per hour and a wind speed of 50 mph (22.4 m/s) at a core-area intake velocity of 400 fpm (2.0 m/s).

6. AMCA Seal: Mark units with AMCA Certified Ratings Seal.
7. Bird and Insect Screen: Interior face of louver.
8. Shape: Round.
9. Louver Schedule: Included at end of Section.

2.4 MATERIALS

A. Aluminum Extrusions: ASTM B221 (ASTM B221M), Alloy 6063-T5, T-52, or T6.

B. Aluminum Sheet: ASTM B209 (ASTM B209M), Alloy 3003 or 5005, with temper as required for forming, or as otherwise recommended by metal producer for required finish.

C. Fasteners: Use types and sizes to suit unit installation conditions.

1. Use Phillips flat-head screws for exposed fasteners unless otherwise indicated.
2. For fastening aluminum, use aluminum or 300 series stainless-steel fasteners.
3. For color-finished louvers, use fasteners with heads that match color of louvers.

D. Postinstalled Fasteners for Concrete and Masonry: Torque-controlled expansion anchors, fabricated from stainless-steel components, with allowable load or strength design capacities calculated according to ICC-ES AC193 and ACI 318 greater than or equal to the design load, as determined by testing according to ASTM E488/E488M conducted by a qualified testing agency.

E. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

2.5 FABRICATION

A. Factory assemble louvers to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

B. Maintain equal louver blade spacing to produce uniform appearance.

C. Fabricate frames, including integral sills, to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining material tolerances, and perimeter sealant joints.

1. Frame Type: Exterior flange unless otherwise indicated.

D. Include supports, anchorages, and accessories required for complete assembly.

E. Join frame members to each other and to fixed louver blades with fillet welds concealed from view, threaded fasteners, or both, as standard with louver manufacturer] unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.

2.6 ALUMINUM FINISHES

A. Finish louvers after assembly.

B. High-Performance Organic Finish: Two-coat fluoropolymer finish complying with AAMA 2604 and containing no less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturer's written instructions.

1. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and openings, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

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

3.2 PREPARATION

A. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation of anchorages that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.

3.3 INSTALLATION

A. Locate and place louvers level, plumb, and at indicated alignment with adjacent work.

B. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.

1. Provide installation of loose plates, angles and miscellaneous shapes required to anchor louvers in wall conditions indicated on Drawings. Refer to Section 055000 Metal Fabrications.

C. Form closely fitted joints with exposed connections accurately located and secured.

D. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.

E. Protect unpainted galvanized and nonferrous-metal surfaces that are in contact with concrete, masonry, or dissimilar metals from corrosion and galvanic action by applying a heavy coating of bituminous paint or by separating surfaces with waterproof gaskets or nonmetallic flashing.

F. Install concealed gaskets, flashings, joint fillers, and insulation as louver installation progresses, where weathertight louver joints are required. Comply with Section 079200 Joint Sealants for sealants applied during louver installation.

3.4 ADJUSTING AND CLEANING

A. Clean exposed louver surfaces that are not protected by temporary covering, to remove fingerprints and soil during construction period. Do not let soil accumulate during construction period.

B. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.

C. Restore louvers damaged during installation and construction, so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units.

1. Touch up minor abrasions in finishes with air-dried coating that matches color and gloss of, and is compatible with, factory-applied finish coating.

3.5 LOUVER SCHEDULE

Item No.	Building	FISH	Space	Width (Inches)	Height (Inches)	Intake / Exhaust	Wall / Ceiling / Soffit	Bottom Elevation	Impact / Non-impact	Comments
1	11	11-01	Corridor	32	24	Relief	Wall	10'-0"	Non-Impact	
2	11	11-01	Corridor	32	24	Relief	Wall	10'-0"	Non-Impact	
3	11	11-01C	Custodial	16	16	Exhaust	Wall	10'-0"	Non-Impact	EF11-2
4	11	11-24	Electrical	32	24	Relief	Wall	10'-0"	Non-Impact	
5	11	11-24	Electrical	32	16	Exhaust	Wall	10'-0"	Non-Impact	EF11-1
6	11	-	Eq Platform	72"	Round	Intake	Wall	16'-0"	Non-Impact	OA AHU11-2
7	11	-	Eq Platform	72"	Round	Intake	Wall	16'-0"	Non-Impact	OA AHU11-1

END OF SECTION 089119

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 ceilings and soffits.
3. Grid suspension systems for gypsum board ceilings.
4. Guard rail system for equipment platform.

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 embossed, high-strength steel studs and tracks, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.

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 (if any) 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. Horizontal Deflection: For non-composite wall assemblies, limited to 1/240 of the wall height based on horizontal loading of 5 lbf/sq. ft. (239 Pa).

2.2 FRAMING SYSTEMS

A. Framing Members, General: Comply with ASTM C754 for conditions indicated.

1. Steel Sheet Components: Comply with ASTM C645 requirements for steel unless otherwise indicated.
2. Protective Coating: ASTM A653/A653M, G40 (Z120), hot-dip galvanized unless otherwise indicated.

B. Studs and Tracks: ASTM C645. Use either conventional steel studs and tracks or embossed, high-strength steel studs and tracks.

1. Embossed, High Strength Steel Studs and Tracks: Roll-formed and embossed with surface deformations to stiffen the framing members so that they are structurally comparable to conventional ASTM C645 steel studs and tracks.

a. Basis of Design: “Viper20 VS125-18” & “ViperTrack VT125-18” by ViperStud/MarinoWare.
b. Minimum Base-Steel Thickness: As required by horizontal deflection performance requirements and not less than 0.0190 inch (0.483 mm).
c. Depth: As indicated on Drawings.

C. Slip-Type Head Joints: Where indicated, provide one of the following:

1. Clip System: Clips designed for use in head-of-wall deflection conditions that provide a positive attachment of studs to tracks while allowing 1-1/2-inch (38 mm) minimum vertical movement.
2. 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.

D. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.

1. Minimum Base-Steel Thickness: 0.0269 inch (0.683 mm).

E. Cold-Rolled Channel Bridging: Steel, 0.0538-inch (1.367-mm) minimum base-steel thickness, with minimum 1/2-inch- (13-mm-) wide flanges.

1. Depth: 1-1/2 inches (38 mm).
2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches (38 by 38 mm), 0.068-inch- (1.72-mm-) thick, galvanized steel.

F. Hat-Shaped, Rigid Furring Channels: ASTM C645.

1. Minimum Base-Steel Thickness: 0.0179 inch (0.455 mm).
2. Depth: 7/8 inch (22.2 mm) or 1-1/2 inches (38 mm) as required.

G. Cold-Rolled Furring Channels: 0.053-inch (1.34 mm) uncoated-steel thickness, with minimum 1/2-inch-(13-mm) wide flanges.

1. Depth: 3/4 inch (19 mm).
2. Furring Brackets: Adjustable, corrugated-edge-type steel sheet with minimum uncoated-steel thickness of 0.0329 inch (0.8 mm).
3. Tie Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.062-inch (1.59-mm) diameter wire, or double strand of 0.048-inch (1.21-mm) diameter wire.

2.3 SUSPENSION SYSTEMS

A. Tie Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.062-inch (1.59-mm) diameter wire, or double strand of 0.048-inch (1.21-mm) 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, AC193, AC58 or AC308 as appropriate for the substrate.

a. Uses: Securing hangers to structure.
b. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B633 or ASTM F1941 (ASTM F1941M), Class Fe/Zn 5, unless otherwise indicated.

2. Power-Actuated Anchors: Not permitted on school sites without prior written consent of Nassau County School District.

C. Wire Hangers: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.16 inch (4.12 mm) in diameter.

D. Carrying Channels (Main Runners): Cold-rolled, commercial-steel sheet with a base-steel thickness of 0.0538 inch (1.367 mm) and minimum 1/2-inch (13 mm) wide flanges.

1. Depth: 1-1/2 inches (38 mm) minimum.

E. Furring Channels (Furring Members):

1. Cold-Rolled Channels: 0.0538-inch (1.367 mm) uncoated-steel thickness, with minimum 1/2-inch (13-mm) wide flanges, 3/4 inch (19 mm) deep.

F. Grid Suspension System for Gypsum Board Ceilings: ASTM C645, direct-hung system composed of main beams and cross-furring members that interlock.

1. Basis of Design: Armstrong Drywall / Stucco / Plaster Flat Ceiling Suspension Systems.
2. Basis of Design – Option: Armstrong Short Span Drywall Framing System.

2.4 AUXILIARY MATERIALS

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

1. Fasteners for Steel Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.

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

3.2 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.

3.3 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.

1. Single-Layer Application: As required by horizontal deflection performance requirements and not greater than 16 inches (406 mm) o.c. unless otherwise indicated.

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 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. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
2. Openings: Screw vertical studs at jambs to jamb anchor clips on opening frames, if any; install track section (for cripple studs) at head and secure to jamb studs.

    a. Install two studs at each jamb unless otherwise indicated.
    b. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
    c. Install framing below sills of openings to match framing required at heads of openings.

3. Fire-Resistance-Rated Partitions (if any): 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.

E. Direct Furring:

1. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners (only if approved in writing by Owner) spaced 24 inches (610 mm) o.c.

F. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch (3 mm) from the plane formed by faces of adjacent framing.

3.4 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.

1. Hangers: 48 inches (1219 mm) o.c.
2. Carrying Channels (Main Runners): 48 inches (1219 mm) o.c.
3. Furring Channels (Furring Members): 16 inches (406 mm) o.c.

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

D. Fire-Resistance-Rated Assemblies (if any): Wire tie furring channels to supports.

E. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.

F. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet (3 mm in 3.6 m) measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION 092216

SECTION 092400 - CEMENT PLASTERING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior horizontal and non-vertical plasterwork (stucco).

B. Related Requirements:

1. Section 092216 Non-Structural Metal Framing for plaster soffit suspension systems.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each type of factory-prepared finish coat and for each color and texture specified.

PART 2 - PRODUCTS

2.1 METAL LATH

A. Expanded-Metal Lath: ASTM C847, cold-rolled carbon-steel sheet with ASTM A653/A653M, G60 (Z180), hot-dip galvanized-zinc coating.

1. Basis of Design: “Flat Diamond Expanded Metal Lath” by Alabama Metal Industries Corporation.
2. Diamond-Mesh Lath: Flat, 2.5 lb/sq. yd. (1.4 kg/sq. m).

2.2 ACCESSORIES

A. General: Comply with ASTM C1063, and coordinate depth of trim and accessories with thicknesses and number of plaster coats required.

B. Plastic Accessories: Manufactured from high-impact PVC.

1. Basis of Design – Manufacturer: Vinyl Corp. A Division of Clarkwestern Dietrich Building Systems.
2. Cornerbeads: With perforated flanges.

a. Smallnose cornerbead; use unless otherwise indicated.

3. Casing Beads: With perforated flanges in depth required to suit plaster bases indicated and flange length required to suit applications indicated.

a. Square-edge style; use unless otherwise indicated.

4. Control Joints: One-piece-type, folded pair of unperforated screeds in M-shaped configuration; with perforated flanges and removable protective tape on plaster face of control joint.
5. Soffit Vents: Three-piece-type, with perforated flanges into stucco; 2 inches wide (50 m) vent and 6-1/8 inches (156 mm) overall.

2.3 MISCELLANEOUS MATERIALS

A. Water for Mixing and Finishing Plaster: Potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.

B. Fiber for Base Coat: Alkaline-resistant glass or polypropylene fibers, 1/2 inch (13 mm) long, free of contaminants, manufactured for use in cement plaster.

C. Fasteners for Attaching Metal Lath to Substrates: ASTM C1063.

D. Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, not less than 0.0475-inch (1.21-mm) diameter unless otherwise indicated.

2.4 PLASTER MATERIALS

A. Masonry Cement: ASTM C91, Type N.

B. Lime: ASTM C206, Type S; or ASTM C207, Type S.

C. Sand Aggregate: ASTM C897.

D. Acrylic-Based Finish Coatings: Factory-mixed acrylic-emulsion coating systems formulated with colorfast mineral pigments and fine aggregates; for use over cement plaster base coats. Include manufacturer's recommended primers and sealing topcoats for acrylic-based finishes.

1. Basis of Design: “Total Journeyman Acrylic Finish Coat” by Total Wall
2. Basis of Design – Color / Texture: “Minimal White #2310A” / “Medium Shotblast”.

2.5 PLASTER MIXES

A. General: Comply with ASTM C926 for applications indicated.

1. Fiber Content: Add fiber to base-coat mixes after ingredients have mixed at least two minutes. Comply with fiber manufacturer's written instructions for fiber quantities in mixes, but do not exceed 1 lb of fiber/cu. yd. (0.6 kg of fiber/cu. m) of cementitious materials.

B. Base-Coat Mixes for Use over Metal Lath: Scratch and brown coats for three-coat plasterwork as follows:

1. Masonry Cement Mixes:

a. Scratch Coat: Mix 1 part masonry cement and 2-1/2 to 4 parts aggregate.

b. Brown Coat: Mix 1 part masonry cement and 3 to 5 parts aggregate, but not less than volume of aggregate used in scratch coat.

C. Factory-Prepared Finish-Coat Mixes: For acrylic-based finish coatings, comply with manufacturer's written instructions.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Prepare smooth, solid substrates for plaster according to ASTM C926.

3.2 INSTALLING METAL LATH

A. Metal Lath: Install according to ASTM C1063.

3.3 INSTALLING ACCESSORIES

A. Install according to ASTM C1063 and at locations indicated on Drawings.

B. Reinforcement for External (Outside) Corners:

1. Install cornerbead at exterior locations.

C. Control Joints: Locate as indicated on Drawings.

3.4 PLASTER APPLICATION

A. General: Comply with ASTM C926.

B. Horizontal soffits; Base-Coat Mixes for Use over Metal Lath: For scratch and brown coats, for three-coat plasterwork and having 3/4-inch (19-mm) total thickness for metal lath on concrete, as follows:

1. Masonry cement mixes.

C. Acrylic-Based Finish Coatings: Apply coating system, including primers, finish coats, and sealing topcoats, according to manufacturer's written instructions.

3.5 PLASTER REPAIRS

A. Repair or replace work to eliminate cracks, dents, blisters, buckles, crazing and check cracking, dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.

END OF SECTION 092400

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 092216 Non-Structural Metal Framing for non-structural steel framing and suspension systems that support gypsum board panels.

1.3 ACTION SUBMITTALS

A. Product Data: For the following:

1. Gypsum board, Type X.
2. Mold-resistant gypsum board.
3. Acoustically enhanced gypsum board.
4. Interior trim.
5. Joint treatment materials.
6. Sound-attenuation blankets.
7. Acoustical sealant.

B. Samples: For the following products:

1. Trim Accessories: Full-size Sample in 12-inch (300 mm) long length for each trim accessory indicated.

1.4 DELIVERY, STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.5 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C840 requirements or gypsum board manufacturer's written instructions, whichever are more stringent.

B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies (if any): 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.

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. Basis of Design: “Fire Check Type X” by Continental.
2. Thickness: 5/8 inch (15.9 mm).
3. Long Edges: Tapered.

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

1. Basis of Design: “Mold Defense Type X” by Continental.
2. Core: 5/8 inch (15.9 mm), Type X.
3. Long Edges: Tapered.
4. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

2.4 SPECIALTY GYPSUM BOARD

A. Acoustically Enhanced Gypsum Board: ASTM C1396/C1396M. Multilayer products constructed of two layers of gypsum boards sandwiching a viscoelastic sound-absorbing polymer core.

1. Basis of Design: "Silent FX Quick Cut" by Certainteed.
2. Core: 5/8 inch (15.9 mm), Type X.
3. Long Edges: Tapered.

2.5 TRIM ACCESSORIES

A. Interior Trim: ASTM C1047.

1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized-steel sheet.
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.

2.6 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C475/C475M.

B. Joint Tape:

1. Interior Gypsum Board: Paper.

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 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 drying-type, all-purpose 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 drying-type, all-purpose compound.

2.7 AUXILIARY MATERIALS

A. 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.

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 (if any): Comply with mineral-fiber requirements of assembly.

E. Acoustical Sealant:

1. Basis of Design: “CP506 Smoke and Acoustic Sealant” by Hilti.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

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

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

3.2 INSTALLATION AND FINISHING OF PANELS, GENERAL

A. Comply with ASTM C840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.

1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m) in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- (6.4- to 9.5-mm-) wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) 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.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

I. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.3 INSTALLATION OF INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:

1. Fire Resistant (Type X): For headers and for other general use except where indicated below.
2. Mold-Resistant & Fire Resistant (Type X): For horizontal ceilings in restrooms.
3. Acoustically Enhanced & Fire Resistant (Type X): For vertical exposed furred wall surfaces and vertical concealed walls surfaces where walls are indicated to extend to roof deck for acoustical separations / sound dampening.

B. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
2. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.

    a. Stagger abutting end joints not less than one framing member in alternate courses of panels.

3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

C. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written instructions and temporarily brace or fasten gypsum panels until fastening adhesive has set.

3.4 INSTALLATION OF TRIM ACCESSORIES

A. General: 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.

B. Control Joints: Install control joints at locations indicated on Drawings and according to ASTM C840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners.
2. LC-Bead: Use at exposed panel edges.
3. L-Bead: Use where indicated.

3.5 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints and damaged surface areas.

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

D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C840:
1. Level 3: Ceiling plenum areas, concealed areas and other areas approved by Architect.
2. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
3. Level 5: Gypsum board headers and soffits.

3.6 PROTECTION

A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

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

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

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

SECTION 093013 - CERAMIC TILING

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. Mosaic tile.
2. Glazed wall tile.
3. Stone thresholds.
4. Crack isolation membrane.

B. Related Requirements:

1. Section 079200 Joint Sealants for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
2. Section 097519 Stone Trim for marble window stools.

1.3 DEFINITIONS

A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.

B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in its "Specifications for Installation of Ceramic Tile."

C. Face Size: Actual tile size, excluding spacer lugs.

D. Module Size: Actual tile size plus joint width indicated.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.

C. Samples for Initial Selection: For tile, grout, and accessories involving color selection.

D. Samples for Verification:

1. Assembled samples mounted on a rigid panel, with grouted joints, for each type and composition of tile and for each color and finish required. Make samples at least 12 inches (300 mm) square, but not fewer than four tiles. Use grout of type and in color or colors approved for completed Work.
2. Full-size units of each type of trim and accessory for each color and finish required.
3. Stone thresholds in 6-inch (150-mm) lengths.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Certificates: For each type of product.

C. Product Test Reports: For tile-setting and -grouting products.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.
2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.

D. Store liquid materials in unopened containers and protected from freezing.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Tile: Obtain tile of each type and color or finish from single source or producer.

1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.

B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from single manufacturer and each aggregate from single source or producer.

1. Obtain setting and grouting materials, except for unmodified Portland cement and aggregate, from single manufacturer.
2. Obtain crack isolation membrane, except for sheet products, from manufacturer of setting and grouting materials.

2.2 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.

1. Provide tile complying with Standard grade requirements.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.

C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

D. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.

1. Where tile is indicated for installation in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.

2.3 TILE PRODUCTS

A. Ceramic Tile Type “CT”: Factory-mounted unglazed ceramic mosaic tile.

1. Basis of Design: “Unglazed Colorbody Porcelain Mosaics” by American Olean.
2. Basis of Design – Color: Price Groups 1, 2 and 3.
3. Composition: Porcelain.
4. Certification: Porcelain tile certified by the Porcelain Tile Certification Agency.
5. Module Shape and Size: Hexagon Mosaic 2 by 2 inches (50.8 by 50.8 mm).
6. Thickness: 1/4 inch (6.4 mm).
7. Face: Pattern of design indicated, with cushion edges.
8. Surface: Smooth, without abrasive admixture.
9. Dynamic Coefficient of Friction: Not less than 0.42.
10. Tile Color and Pattern: Architect reserves right to select any colors, patterns and/or finishes for tile in same price groups as Basis of Design.

B. Ceramic Tile Type “CTB”: Glazed wall tile base.

1. Basis of Design – Straight Pieces: “Thin Lip Cove Base S-3619T” by American Olean.
2. Basis of Design – Outside Corners: “Thin Lip Cove Base Corner SCRL-3619T” by American Olean.
3. Basis of Design – Color: Price Group 1.
4. Face Size Variation: Rectified.
5. Thickness: 5/16 inch (8 mm).
6. Finish: Matte glaze.
7. Tile Color and Pattern: Architect reserves right to select any colors, patterns and/or finishes for tile in same price group as Basis of Design.
8. Trim Units: Provide shapes as follows, selected from manufacturer's standard shapes:

    a. Base for Thinset Mortar Installations: Sanitary cove base with bullnose top edge, module size 6 by 6 inches (152 by 152 mm).
    b. External Corners for Thinset Mortar Installations: Sanitary cove base with bullnose top edge and bullnose outside corner, left or right-hand as applicable, same size as adjoining flat tile.
    c. Internal Corners: Neatly miter cut from stretcher shapes.

2.4 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch (1.5 mm) above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch (12.7 mm) or less above adjacent floor surface.

B. Marble Thresholds: ASTM C503/C503M, with a minimum abrasion resistance of 10 according to ASTM C1353 or ASTM C241/C241M and with honed finish.

1. Description: Uniform, fine- to medium-grained white stone with gray veining.
2. Basis of Design: “White Cherokee” by Polycor.

2.5 CRACK ISOLATION MEMBRANE

A. General: Manufacturer's standard product that complies with ANSI A118.12 for standard performance and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Fluid-Applied Membrane: Liquid-latex rubber or elastomeric polymer.

1. Basis of Design: “Mapelastic CI” by Mapei.

2.6 SETTING MATERIALS

A. Portland Cement Mortar (Thickset) Installation Materials: ANSI A108.02.

1. Cleavage Membrane: Asphalt felt, ASTM D226/D226M, Type I (No. 15); or polyethylene sheeting, ASTM D4397, 4.0 mils (0.1 mm) thick.
2. Reinforcing Wire Fabric: Galvanized, welded-wire fabric, 2 by 2 inches (50.8 by 50.8 mm) by 0.062-inch (1.57-mm) diameter; comply with ASTM A185/A185M and ASTM A82/A82M, except for minimum wire size.
3. Latex Additive: Manufacturer's standard acrylic resin or styrene-butadiene-rubber water emulsion, serving as replacement for part or all of gaging water, of type specifically recommended by latex-additive manufacturer for use with field-mixed portland cement and aggregate mortar bed.

B. Improved Modified Dry-Set Mortar (Thinset): ANSI A118.15.

1. Basis of Design: “Granirapid” by Mapei.
2. For wall applications, provide mortar that complies with requirements for non-sagging mortar in addition to the other requirements in ANSI A118.15.

C. Water-Cleanable, Tile-Setting Epoxy: ANSI A118.3.

1. Basis of Design: “Kerapoxy CQ” by Mapei.

2.7 GROUT MATERIALS

A. High-Performance Tile Grout: ANSI A118.7.

1. Basis of Design: “Ultracolor Plus FA” by Mapei.
2. Basis of Design – Color: As selected by Architect from Manufacturer’s full range.

B. Water-Cleanable Epoxy Grout: ANSI A118.3.

1. Basis of Design: “Kerapoxy CQ” by Mapei.
2. Basis of Design – Color: As selected by Architect from Manufacturer’s full range.

2.8 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

B. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

C. Floor Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.

1. Basis of Design: “Ultra Care Grout Sealer” by Mapei.

2.9 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
2. Verify that concrete substrates for tile floors installed with bonded mortar bed comply with surface finish requirements in ANSI A108.01 for installations indicated.

    a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
    b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.

3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

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

3.2 PREPARATION

A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thinset mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

B. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 INSTALLATION OF CERAMIC TILE

A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.

1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing 95 percent mortar coverage:

    a. Tile floors in wet areas.

B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.

E. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.

1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.

F. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:

1. Mosaic Tile: 1/16 inch (1.6 mm).
2. Glazed Wall Tile: 1/16 inch (1.6 mm).

G. Center wall tile between corners of each wall section. Center line of wall section shall be center of tile or centerline of tile joint. Select layout which results in largest tile cuts at each corner.

H. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.

I. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.

1. At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in improved modified dry-set mortar (thinset).
2. Do not extend crack isolation membrane under thresholds set in improved modified dry-set mortar. Fill joints between such thresholds and adjoining tile set on crack isolation membrane with elastomeric sealant.

J. Floor Sealer: Apply floor sealer to cementitious grout joints in tile floors according to floor-sealer manufacturer's written instructions. As soon as floor sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

3.4 INSTALLATION OF CRACK ISOLATION MEMBRANE

A. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness that is bonded securely to substrate.

B. Allow crack isolation membrane to cure before installing tile or setting materials over it.

3.5 ADJUSTING AND CLEANING

A. Remove and replace tile that is damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.

B. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

1. Remove grout residue from tile as soon as possible.
2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

3.6 PROTECTION

A. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.

B. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

C. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.7 INTERIOR CERAMIC TILE INSTALLATION SCHEDULE

A. Interior Floor Installations, Concrete Subfloor:

1. Ceramic Tile Installation “SM1”: TCNA F131; water-cleanable, tile-setting epoxy; epoxy grout.

    a. Ceramic Tile Type: CT.
    b. Grout: Water-cleanable epoxy grout.
    c. Use: Where concrete substrate is not recessed for mortar bed.

2. Ceramic Tile Installation “SM2”: TCNA F132; water-cleanable, tile-setting epoxy on cured cement mortar bed installed over cleavage membrane; epoxy grout.

    a. Ceramic Tile Type: CT.
    b. Grout: Water-cleanable epoxy grout.
    c. Use: Where concrete substrate is recessed for mortar bed.

B. Interior Wall Installations, Masonry or Concrete:

1. Ceramic Tile Installation “SM3”: TCNA W202; thinset mortar.

    a. Ceramic Tile Type: CTB.
    b. Thinset Mortar: Improved modified dry-set mortar.
    c. Grout: High-performance tile grout.
    d. Use: For tile wall base.

END OF SECTION 093013

SECTION 095113 - ACOUSTICAL PANEL CEILINGS

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 acoustical panels and exposed suspension systems for interior ceilings.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each component indicated and for each exposed finish required, prepared on Samples of sizes indicated below:

1. Acoustical Panels: Set of 6-inch (150 mm) square Samples of each type, color, pattern, and texture.
2. Exposed Suspension-System Members, Moldings, and Trim: Set of 6-inch (150 mm) long Samples of each type, finish, and color.

1.5 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each acoustical panel ceiling, for tests performed by a qualified testing agency.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For finishes to include in maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are new and as originally packaged with protective covering for storage and identified with labels describing contents.

1. Acoustical Ceiling Units: Full-size panels equal to 2 percent of quantity installed.
2. Suspension-System Components: Quantity of each exposed component equal to 2 percent of quantity installed.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical panels, suspension-system components, and accessories to Project site and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain each type of acoustical ceiling panel and its supporting suspension system from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: Class A according to ASTM E1264.
2. Smoke-Developed Index: 50 or less.

2.3 ACOUSTICAL PANELS

A. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.

1. Basis of Design: “Fissured (756)” by Armstrong.
2. Basis of Design – Color: “White (Wh)”.

B. Classification: Provide panels as follows:

1. Type and Form: Type III, mineral base with painted finish; Form 2, water felted.
2. Pattern: CD (perforated, small holes and fissured).

C. Color: As indicated by manufacturer's designation above.

D. Light Reflectance (LR): Not less than 0.75.

E. Ceiling Attenuation Class (CAC): Not less than 30.

F. Noise Reduction Coefficient (NRC): Between 0.50 and 0.60 inclusive.

G. Edge/Joint Detail: Square.

H. Thickness: 5/8 inch (15 mm).

I. Modular Size: 24 by 24 inches (610 by 610 mm).

2.4 METAL SUSPENSION SYSTEM

A. Metal Suspension-System Standard: Provide manufacturer's standard, direct-hung, metal suspension system and accessories according to ASTM C635/C635M and designated by type, structural classification, and finish indicated.

1. High-Humidity Finish: Where indicated, provide coating tested and classified for "severe environment performance" according to ASTM C635/C635M.

B. Basis of Design: “Chicago Metallic 1200 15/16” by Rockfon part of the ROCKWOOL Group.

C. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized, G30 (Z90) coating designation; with prefinished 15/16-inch (24 mm) wide metal caps on flanges.

1. Structural Classification: Intermediate-duty system.
2. End Condition of Cross Runners: Override (stepped) or butt-edge type.
3. Face Design: Flat, flush.
4. Cap Material: Cold-rolled steel.
5. Cap Finish: Painted white.

2.5 ACCESSORIES

A. Attachment Devices: Size for five times the design load indicated in ASTM C635/C635M, Table 1, "Direct Hung," unless otherwise indicated.

1. Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing according to ASTM E488/E488M or ASTM E1512 as applicable, conducted by a qualified testing and inspecting agency.

a. Type: Cast-in-place, Postinstalled expansion or Postinstalled bonded anchors.
b. Corrosion Protection: Carbon-steel components zinc plated according to ASTM B633, Class SC 1 (mild) service condition.

2. Power-Actuated Fasteners in Concrete: Not permitted for use on school sites without prior written permission from Nassau County School District.

B. Wire Hangers, Braces, and Ties: Provide wires as follows:

1. Zinc-Coated, Carbon-Steel Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper.
2. Size: Wire diameter sufficient for its stress at three times hanger design load (ASTM C635/C635M, Table 1, "Direct Hung") will be less than yield stress of wire, but not less than 0.106-inch (2.69 mm) diameter wire.

2.6 METAL EDGE MOLDINGS AND TRIM

A. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.

1. Edge moldings shall fit acoustical panel edge details and suspension systems indicated and match width and configuration of exposed runners unless otherwise indicated.
2. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

2.7 ACOUSTICAL SEALANT

A. Acoustical Sealant: As specified in Section 079200 Joint Sealants and 092900 Gypsum Board.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.

B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.

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

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders unless otherwise indicated, and comply with layout shown on reflected ceiling plans.

B. Layout openings for penetrations centered on the penetrating items.

3.3 INSTALLATION

A. Install acoustical panel ceilings according to ASTM C636/C636M and manufacturer's written instructions.

B. Suspend ceiling hangers from building's structural members and as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly to structure or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
5. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners (only if pre-approved by Owner) that extend through forms into concrete.
6. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
7. Do not attach hangers to steel deck tabs.
8. Do not attach hangers to steel roof deck. Attach hangers to structural members.
9. Space hangers not more than 48 inches (1200 mm) o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches (200 mm) from ends of each member.
10. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.

C. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.

1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
2. Screw attach moldings to substrate at intervals not more than 16 inches (400 mm) o.c. and not more than 3 inches (75 mm) from ends. Miter corners accurately and connect securely.
3. Do not use exposed fasteners, including pop rivets, on moldings and trim.

D. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

E. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide precise fit.

1. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.

3.4 ERECTION TOLERANCES

A. Suspended Ceilings: Install main and cross runners level to a tolerance of 1/8 inch in 12 feet (3 mm in 3.6 m), non-cumulative.

B. Moldings and Trim: Install moldings and trim to substrate and level with ceiling suspension system to a tolerance of 1/8 inch in 12 feet (3 mm in 3.6 m), non-cumulative.

3.5 CLEANING

A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.

B. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095113

SECTION 096513 - RESILIENT BASE AND ACCESSORIES

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. Vinyl base.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each exposed product and for each color and texture specified, not less than 12 inches (300 mm) long.

C. Product Schedule: For resilient base and accessory products.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Furnish not less than 10 linear feet (3 linear m) for every 500 linear feet (150 linear m) or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C).

1.6 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C), in spaces to receive resilient products during the following periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).

C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 VINYL BASE

A. Basis of Design: “Traditional Vinyl Wall Base” by Johnsonite.

B. Product Standard: ASTM F1861, Type TV (vinyl, thermoplastic).

1. Group: I (solid, homogeneous).
2. Style and Location:

a. Style B, Cove: Provide in areas with resilient floor coverings and areas with sealed concrete floors.

C. Minimum Thickness: 0.125 inch (3.2 mm).

D. Height: 4 inches (102 mm).

E. Lengths: Coils in manufacturer's standard length.

F. Outside Corners: Job formed.

G. Inside Corners: Job formed.

H. Colors and Patterns: As selected by Architect from base manufacturer's full range of colors, textures and sheens.

2.2 INSTALLATION MATERIALS

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

B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

1. Basis of Design: Mapei Ultrabond ECO 575.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

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

1. Installation of resilient products indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

C. Do not install resilient products until materials are the same temperature as space where they are to be installed.

1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

D. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.3 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

G. Job-Formed Corners:

1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches (76 mm) in length.

a. Form without producing discoloration (whitening) at bends.

2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches (76 mm) in length.

a. Miter or cope corners to minimize open joints.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.

B. Perform the following operations immediately after completing resilient-product installation:

1. Remove adhesive and other blemishes from surfaces.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION 096513

SECTION 096519 - RESILIENT TILE FLOORING

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. Commercial luxury vinyl floor tile.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For each type of resilient floor tile.

1. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
2. Show details of special patterns.

C. Samples for Initial Selection: For each type of floor tile indicated.

D. Samples for Verification: Full-size units of each color and pattern of floor tile required.

E. Product Schedule: For floor tile.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Floor Tile: Furnish one box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are competent in techniques required by manufacturer for floor tile installation and seaming method indicated.

1. Engage an installer who employs workers for this Project who are trained or certified by floor tile manufacturer for installation techniques required.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C). Store floor tiles on flat surfaces.

1.9 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 65 deg F (18 deg C) or more than 85 deg F (29 deg C), in spaces to receive floor tile during the following periods:

1. 7 days before installation.
2. During installation.
3. 7 days after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).

C. Close spaces to traffic during floor tile installation.

D. Close spaces to traffic for 48 hours after floor tile installation.

E. Install floor tile after other finishing operations, including painting, have been completed.

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 COMMERCIAL LUXURY VINYL FLOOR TILE “LVT”

A. Basis of Design – Option A: “Jeogori 3.0 mm (0215V)” by Shaw Contract.

B. Basis of Design – Option B: “Parallel USA 20 2.5 mm (Havana or Jace)” by Armstrong Flooring.

C. Basis of Design – Color: As selected by Architect from colorways indicated.

D. Tile Standard: ASTM F1700.

1. Class: Class III, Printed Film Vinyl Tile.
2. Type: B, Embossed Surface.

E. Thickness – Wear Layer: 0.020 inch (0.5 mm) minimum.

F. Thickness – Overall: 0.098 inch (2.5 mm) minimum.

G. Size: 18 by 18 inches (457 by 457 mm).

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

1. Basis of Design: Mapei Ultrabond ECO 373.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.

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

3.2 PREPARATION

A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates: Prepare according to ASTM F710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by floor tile manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 7 nor more than 10 pH.
4. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft. (304.8 sq. m), and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

    a. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 85 percent relative humidity level measurement.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install floor tiles until materials are the same temperature as space where they are to be installed.

1. At least 48 hours in advance of installation, move resilient floor tile and installation materials into spaces where they will be installed.

E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient floor tile.

3.3 FLOOR TILE INSTALLATION

A. Comply with manufacturer's written instructions for installing floor tile.

B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

1. Lay tiles square with room axis.

C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.

1. Lay tiles with grain running in one direction (monolithic) or quarter-turn with grain direction alternating in adjacent tiles (basket-weave pattern) as selected by Architect.

D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.

G. Adhere floor tiles to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting floor tile.

B. Perform the following operations immediately after completing floor tile installation:

1. Remove adhesive and other blemishes from surfaces.
2. Sweep and vacuum surfaces thoroughly.
3. Damp-mop surfaces to remove marks and soil.

C. Protect floor tile from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Cover floor tile until Substantial Completion.

END OF SECTION 096519

SECTION 097519 - STONE TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes interior stone window stools.

B. Related Requirements:

1. Section 079200 Joint Sealants for sealing joints in interior stone trim.

1.3 ACTION SUBMITTALS

A. Product Data: For each variety of stone, stone accessory, and manufactured product.

B. Shop Drawings: Show fabrication and installation details for stone trim, including dimensions and profiles of stone units.

1. Show locations and details of joints.
2. Show locations and details of anchors, including locations of supporting construction.

C. Samples:

1. For each stone type indicated, in sets of Samples not less than 12 inches (300 mm) square. Include two or more Samples in each set, and show the full range of variations in appearance characteristics in completed Work.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.

B. Material Test Reports:

1. Sealant Compatibility and Adhesion Test Report: From sealant manufacturer, indicating that sealants will not stain or damage stone. Include interpretation of test results and recommendations for primers and substrate preparation needed for adhesion.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate stone similar to that required for this Project, and whose products have a record of successful in-service performance.

B. Installer Qualifications: A firm or individual experienced in installing interior stone trim similar in material, design, and extent to that indicated for this Project, whose work has a record of successful in-service performance.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store and handle stone and related materials to prevent deterioration or damage due to moisture, temperature changes, contaminants, corrosion, breaking, chipping, and other causes.

B. Mark stone units, on surface that will be concealed after installation, with designations used on Shop Drawings to identify individual stone units.

C. Deliver sealants to Project site in original unopened containers labeled with manufacturer's name, product name and designation, color, expiration period, pot life, curing time, and mixing instructions for multicomponent materials.

D. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

1.7 FIELD CONDITIONS

A. Maintain air and material temperatures to comply with requirements of installation material manufacturers, but not less than 50 deg F (10 deg C) during installation and for seven days after completion.

B. Field Measurements: Verify dimensions of construction to receive interior stone trim by field measurements before fabrication, and indicate measurements on Shop Drawings.

1.8 COORDINATION

A. Time delivery and installation of interior stone trim to avoid extended on-site storage and to coordinate with work adjacent to interior stone trim.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Stone: Obtain stone from a single quarry with resources to provide materials of consistent quality in appearance and physical properties.

2.2 MARBLE

A. Basis of Design: "White Cherokee" by Polycor.

B. Cut stone from one block or contiguous, matched blocks in which natural markings occur.

C. Finish: Polished.

2.3 SETTING MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I or Type II.

1. Low-Alkali Cement: Not more than 0.60 percent total alkali when tested according to ASTM C114.

B. Hydrated Lime: ASTM C207, Type S.

C. Aggregate: ASTM C144.

D. Water: Potable.

2.4 SEALANTS

A. Joint Sealants: Manufacturer's standard sealants that comply with applicable requirements in Section 079200 Joint Sealants and will not stain the stone they are applied to.

1. Colors: Provide colors of exposed sealants to match other joints in stone adjoining sealed joints unless otherwise indicated.

2.5 STONE ACCESSORIES

A. Temporary Setting Shims: Rigid plastic shims, non-staining to stone, sized to suit joint thickness.

B. Cleaner: Stone cleaner specifically formulated for stone types, finishes, and applications indicated, as recommended by stone producer. Do not use cleaning compounds containing acids, caustics, harsh fillers, or abrasives.

C. Stone Sealer: Colorless, stain-resistant sealer that does not affect color or physical properties of stone surfaces, as recommended by stone producer for application indicated.

2.6 STONE FABRICATION, GENERAL

A. Select stone for intended use to prevent fabricated units from containing cracks, seams, and starts that could impair structural integrity or function.

1. Repairs that are characteristic of the varieties specified are acceptable, provided they do not impair structural integrity or function and are not aesthetically unpleasing, as judged by Architect.

B. Fabricate stone trim in sizes and shapes required to comply with requirements indicated.

1. For marble, comply with recommendations in MIA's "Dimension Stone - Design Manual VII."

C. Cut stone to produce pieces of thickness, size, and shape indicated and to comply with fabrication and construction tolerances recommended by applicable stone association.

1. Where items are installed with stone edges visible in the finished work, make items uniform in thickness and of identical thickness for each type of item; gage back of stone if necessary.
2. Clean sawed backs of stones to remove rust stains and iron particles.
3. Dress joints straight and at right angle to face unless otherwise indicated.

D. Finish exposed faces and edges of stone to comply with requirements indicated for finish of each stone type required and to match approved Samples.

2.7 STONE TRIM

A. Stone Window Stools:

1. Nominal Thickness: 1/2 inch (12 mm) unless otherwise indicated.
2. Edge Detail: 1/16 inch (1.5 mm) bevel at top and bottom edges, corners slightly eased.
3. Ends: Extend stools beyond masonry window openings past radius of bullnose and finish ends to match exposed edge.
4. Joints: 1/16 inch (1.5 mm) wide grouted joints between pieces (where required) and 1/8 inch (3 mm) wide, sealant-filled joints between stools and wall.
5. Fabricate window stools in one piece for depth of window opening plus overhang indicated on Drawings.
6. Fabricate window stools in one piece for width of window openings plus required extensions for window openings less than 6 feet (1828 mm) in width. For window openings larger than 6 feet (1828 mm), fabricate stools in sections to match the widths of the individual window units mulled together in the opening where stool is to be installed. Center joints on window mullions.

2.8 MIXES

A. Mortar, General: Comply with referenced standards and with manufacturers' written instructions for mix proportions, mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures needed to produce mortar of uniform quality and with optimum performance characteristics.

1. Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated. Do not use calcium chloride.
2. Combine and thoroughly mix cementitious materials, water, and aggregates in a mechanical batch mixer unless otherwise indicated. Discard mortar when it has reached initial set.

B. Setting Mortar: Comply with ASTM C270, Proportion Specification.

1. Type N.

2. Mix Proportions: 1 part portland cement and 2-1/2 to 4 parts lime with aggregate ratio of 2-1/4 to 3 times the volume of cement and lime.

C. Premixed Setting Mortar: Professional grade, lightweight, single component, thin-set, non-sag mortar.

1. Basis of Design: Mapei Ultralite Mortar Pro with Polymer for Large and Heavy Tile.

D. Grout: Comply with mixing requirements of referenced ANSI standards and with manufacturer's written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to receive stone trim and conditions under which stone trim will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of stone trim.

B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of stone trim.

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

3.2 SETTING STONE, GENERAL

A. Before setting stone, clean surfaces that are dirty or stained by removing soil, stains, and foreign materials. Clean stone by thoroughly scrubbing with fiber brushes and then drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives.

B. Do necessary field cutting as stone is set. Use power saws with diamond blades to cut stone. Cut lines straight and true, with edges eased slightly to prevent snipping.

C. Contiguous Work: Provide reveals and openings as required to accommodate contiguous work.

D. Set stone to comply with requirements indicated. Install anchors, supports, fasteners, and other attachments indicated or necessary to secure stone in place. Shim and adjust anchors, supports, and accessories to set stone accurately in locations indicated, with edges and faces aligned according to established relationships and indicated tolerances.

E. Erect stone units level, plumb, and true with uniform joint widths. Use temporary shims to maintain joint width.

F. Provide expansion, control, and pressure-relieving joints of widths and at locations indicated.

1. Sealing of expansion and other joints is specified in Section 079200 Joint Sealants.
2. Keep expansion joints free of plaster, mortar, grout, and other rigid materials.

3.3 CONSTRUCTION TOLERANCES

A. Variation from Plumb: For vertical lines and surfaces, do not exceed 1/8 inch in 96 inches (3 mm in 2400 mm), 1/4 inch (6 mm) maximum.

B. Variation from Level: For lintels, sills, window stools, chair rails, horizontal bands, horizontal grooves, and other conspicuous lines, do not exceed 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 3/8 inch (10 mm) maximum.

C. Variation of Linear Building Line: For position shown in plan and related portion of walls and partitions, do not exceed 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 3/8 inch (10 mm) maximum.

D. Variation in Cross-Sectional Dimensions: For thickness of walls from dimensions indicated, do not exceed plus or minus 1/8 inch (3 mm).

E. Variation in Joint Width: Do not vary from average joint width more than plus or minus 1/16 inch (1.5 mm) or one-fourth of nominal joint width, whichever is less.

F. Variation in Plane between Adjacent Stone Units (Lipping): Do not exceed 1/32-inch (0.8-mm) difference between planes of adjacent units.

3.4 INSTALLATION

A. Stone Window Stools: Set stone window stools on masonry in a full bed of mortar.

B. Grout joints after setting stone.

C. Fill indicated joints with sealant after setting and grouting stone.

3.5 GROUTING JOINTS

A. Grout stone to comply with ANSI A108.10.

1. Use unsanded grout mixture for joints 1/8 inch (3 mm) and narrower.

B. Remove temporary shims before grouting.

C. Tool joints uniformly and smoothly with plastic tool.

3.6 JOINT-SEALANT INSTALLATION

A. Prepare joints and apply sealants of type and at locations indicated to comply with applicable requirements in Section 079200 "Joint Sealants." Remove temporary shims before applying sealants.

3.7 ADJUSTING AND CLEANING

A. In-Progress Cleaning: Clean interior stone trim as work progresses. Remove adhesive, grout, mortar, and sealant smears immediately.

B. Remove and replace interior stone trim of the following description:

1. Broken, chipped, stained, or otherwise damaged stone. Stone may be repaired if methods and results are approved by Architect.
2. Defective stone trim.
3. Defective joints, including misaligned joints.
4. Interior stone trim and joints not matching approved Samples.
5. Interior stone trim not complying with other requirements indicated.

C. Replace in a manner that results in interior stone trim that matches approved Samples, complies with other requirements, and shows no evidence of replacement.

D. Clean interior stone trim no fewer than six days after completion of grouting and pointing, using clean water and soft rags or stiff-bristle fiber brushes. Do not use wire brushes, acid-type cleaning agents, cleaning compounds with caustic or harsh fillers, or other materials or methods that could damage stone.

E. Sealer Application: Apply stone sealer to comply with stone producer's and sealer manufacturer's written instructions and recommendations.

3.8 PROTECTION

A. Protect stone surfaces, edges, and corners from construction damage. Use securely fastened untreated wood, plywood, or heavy cardboard to prevent damage.

B. Before inspection for Substantial Completion, remove protective coverings and clean surfaces.

END OF SECTION 097519

SECTION 099113 - EXTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Primers.
2. Finish coatings.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each type of topcoat product.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to products listed in the Exterior Painting Schedule for the coating category indicated.

2.2 PAINT PRODUCTS, GENERAL

A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by topcoat manufacturer for use in paint system and on substrate indicated.

B. Colors: As selected by Architect from manufacturer's full range.

C. Color Intent:

1. Nearly 100 percent of surface area for exterior surfaces will be painted with deep tones.

2.3 PRIMERS

A. Water-Based Rust-Inhibitive Primer: Corrosion-resistant, water-based-emulsion primer formulated for resistance to flash rusting when applied to cleaned, interior ferrous metals subject to mildly corrosive environments, MPI #107.

1. Basis of Design: “Pro Industrial Pro-Cryl Universal Primer” by Sherwin Williams.

2.4 FINISH COATINGS

A. Exterior, Water-Based Light-Industrial Coating, Semigloss: Pigmented, water-based emulsion coating for exterior primed wood and metal surfaces (e.g., walls, doors, frames, trim, and sash), providing resistance to moderate abrasion and mild chemical exposure and corrosive conditions. MPI #153.

1. Basis of Design: “Pro Industrial Acrylic Semi-Gloss” by Sherwin Williams.

2. Gloss Level: Gloss of 35 to 55 units at 60 degrees when tested in accordance with ASTM D523.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify suitability of substrates, including surface conditions and compatibility, with finishes and primers.

B. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems specified in this Section.

3.3 INSTALLATION

A. Apply paints in accordance with manufacturer's written instructions.

B. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 CLEANING AND PROTECTION

A. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

B. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

C. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 EXTERIOR PAINTING SCHEDULE

A. Galvanized-Metal Substrates:

1. Water-Based, Light Industrial Coating System “PNT-2” & “PNT-3”:

a. Prime Coat: Primer, rust-inhibitive, water based.
b. Intermediate Coat: Matching topcoat.
c. Topcoat: Exterior, water-based, light industrial coating, semigloss.

2. Exterior galvanized downspouts are not to be painted.

B. Concrete Eyebrow Substrates:

1. Epoxy-Modified Latex System “HPC-1”:

a. Prime Coat: Epoxy-modified latex, matching topcoat.
b. Intermediate Coat: Epoxy-modified latex, matching topcoat.
c. Topcoat: Epoxy-modified latex, gloss (MPI Gloss Level 6), MPI #115.

1) Basis of Design: “Pro Industrial Water Based Catalyzed Epoxy” by Sherwin Williams.

END OF SECTION 099113

SECTION 099123 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Primers.
2. Water-based finish coatings.
3. Floor sealers.
4. Fire retardant paint.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each type of topcoat product.

C. Product Schedule: Use same designations indicated on Drawings and in the Interior Painting Schedule to cross-reference paint systems specified in this Section. Include color designations.

1.3 QUALITY ASSURANCE

A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to products listed in the Interior Painting Schedule for the coating category indicated.

2.2 PAINT PRODUCTS, GENERAL

A. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

B. Colors: As selected by Architect from manufacturer's full range.

C. Color Intent:

1. Nearly 100 percent of surface area for non-concrete floor surfaces will be painted with deep tones.

2.3 PRIMERS

A. Water-Based Rust-Inhibitive Primer: Corrosion-resistant, water-based-emulsion primer formulated for resistance to flash rusting when applied to cleaned, interior ferrous metals subject to mildly corrosive environments, MPI #107.

1. Basis of Design: “Pro Industrial Pro-Cryl Universal Primer” by Sherwin Williams.

2.4 WATER-BASED FINISH COATS

A. Interior, Water-Based Light-Industrial Coating, Semigloss: Pigmented, water-based emulsion coating for interior primed wood and metal surfaces (e.g., walls, doors, frames, trim, and sash), providing resistance to moderate abrasion and mild chemical exposure and corrosive conditions. MPI #153.

1. Basis of Design: “Pro Industrial Acrylic Semi-Gloss” by Sherwin Williams.

2. Gloss Level: Gloss of 35 to 55 units at 60 degrees when tested in accordance with ASTM D523.

2.5 FLOOR SEALERS AND PAINTS

A. Water-Based Concrete Floor Sealer: Clear, water-based, acrylic-copolymer-emulsion sealer formulated for oil, gasoline, alkali, and water resistance and for use on concrete traffic surfaces, MPI #99.

1. Basis of Design: “H & C Clarishield Water-Based Wet-Look Concrete Sealer” by H & C Products Group.

2.6 FIRE RETARDANT PAINT

A. Water-Based Fire Retardant Paint: Latex, intumescent, low VOC, fire retardant coating for interior wood surfaces. Class A when tested in accordance with ASTM E84, UL 723 & ASTM E2768.

1. Basis of Design – Option A: “Insul-X Fire Retardant Paint FR-210” by Benjamin Moore & Co.
2. Basis of Design – Option B: “Flame Control No. 20-20A” by Flame Control Coatings, LLC.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

B. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems specified in this Section.

3.3 INSTALLATION

A. Apply paints according to manufacturer's written instructions.

B. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

C. Painting Fire-Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:

1. Paint the following work where exposed in equipment rooms on the main floor level (not on the equipment platforms) unless otherwise indicated:

a. Uninsulated metal piping.
b. Uninsulated plastic piping.
c. Pipe hangers and supports.
d. Metal conduit.
e. Wood backing or mounting boards (with fire retardant paint) regardless of location.

2. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

3.4 CLEANING AND PROTECTION

A. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

B. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

C. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 INTERIOR PAINTING SCHEDULE

A. Concrete Substrates, Traffic Surfaces:

1. Water-Based Concrete Floor Sealer System “SC”.

a. First Coat: Matching topcoat.
b. Topcoat: Water-based concrete floor sealer.

B. Steel Substrates:

1. Water-Based Light-Industrial Coating System “PNT-1”:

a. Prime Coat: Primer, rust-inhibitive, water based.
b. Intermediate Coat: Matching topcoat.
c. Topcoat: Interior, water-based, light-industrial coating, semigloss.

C. Galvanized-Metal Substrates:

1. Water-Based Light-Industrial Coating System “PNT-1”:

a. Prime Coat: Primer, rust-inhibitive, water based.
b. Intermediate Coat: Matching topcoat.
c. Topcoat: Interior, water-based, light-industrial coating, semigloss.

D. Wood Backboards for Equipment Mounting:

1. Water-Based Fire Retardant Paint.

a. Apply two coats over properly prepared surfaces to dry-film thickness of 5.2 mils.

END OF SECTION 099123

SECTION 099600 - HIGH-PERFORMANCE COATINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes surface preparation and the application of high-performance coating systems on the following substrates:

1. Interior Substrates:

a. Concrete surfaces except for floors.
b. Concrete masonry units (CMUs).
c. Gypsum board.

1.2 DEFINITIONS

A. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D523.

B. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D523.

C. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D523.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.

B. Samples: For each type of coating system and in each color and gloss of topcoat indicated.

1.4 QUALITY ASSURANCE

A. Mockups: Apply mockups of each coating system indicated to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each coating system.

a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
b. Other Items: Architect will designate items or areas required.
c. Review of mockups shall be made under proposed final lighting conditions.

2. Final approval of color selections will be based on mockups.

    a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to products listed in the Exterior High-Performance Coating Schedule or Interior High-Performance Coating Schedule for the coating category indicated.

2.2 HIGH-PERFORMANCE COATINGS, GENERAL

A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."

B. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
3. Products shall be of same manufacturer for each coat in a coating system.

C. Colors: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Concrete: 12 percent.
2. Masonry (Clay and CMUs): 12 percent.
3. Gypsum Board: 12 percent.

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

D. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and coating systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair bond of coatings, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

3.3 APPLICATION

A. Apply high-performance coatings according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."

B. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

3.4 INTERIOR HIGH-PERFORMANCE COATING SCHEDULE

A. Concrete Wall, Column, Beam and Eyebrow Substrates:

1. Epoxy-Modified Latex System “HPC-1”:

a. Prime Coat: Epoxy-modified latex, matching topcoat.
b. Intermediate Coat: Epoxy-modified latex, matching topcoat.
c. Topcoat: Epoxy-modified latex, gloss (MPI Gloss Level 6), MPI #115.

1) Basis of Design: “Pro Industrial Water Based Catalyzed Epoxy” by Sherwin Williams.

B. CMU Substrates:

1. Epoxy-Modified Latex System “HPC-1”:

a. Block Filler: Block filler, latex, interior/exterior, MPI #4.

1) Basis of Design: “Pro Industrial Heavy Duty Block Filler” by Sherwin Williams.

b. Intermediate Coat: Epoxy-modified latex, interior, matching topcoat.

c. Topcoat: Epoxy-modified latex, gloss (MPI Gloss Level 6), MPI #115.

1) Basis of Design: “Pro Industrial Water Based Catalyzed Epoxy” by Sherwin Williams.

C. Gypsum Board Substrates:

1. Epoxy-Modified Latex System “HPC-2” & “HPC-3”:

a. Prime Coat: Primer sealer, latex, interior, MPI #50.

1) Basis of Design: “ProMar 200 Zero VOC Interior Latex Primer” by Sherwin Williams.

b. Intermediate Coat: Epoxy-modified latex, matching topcoat.
c. Topcoat: Epoxy-modified latex, gloss (MPI Gloss Level 6), MPI #115.

1) Basis of Design: “Pro Industrial Water Based Catalyzed Epoxy” by Sherwin Williams.

END OF SECTION 099600

SECTION 101100 - VISUAL DISPLAY UNITS

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. Visual display board assemblies.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, finishes, and accessories for visual display units.

B. Shop Drawings: For visual display units.

1. Include plans, elevations, sections, details, and attachment to other work.
2. Show locations of panel joints. Show locations of field-assembled joints for factory-fabricated units too large to ship in one piece.
3. Include sections of typical trim members.

C. Samples for Initial Selection: For each type of visual display unit indicated, for units with factory-applied color finishes, and as follows:

1. Samples of facings for each markerboard type, indicating color and texture.
2. Samples of facings for each tackboard type, indicating color and texture.
3. Samples of each type of trim, indicating finish and texture.

D. Product Schedule: For visual display units.

1.5 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each visual display unit, for tests performed by a qualified testing agency.

B. Sample Warranties: For manufacturer's special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For visual display units to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver factory-fabricated visual display units completely assembled in one piece. If dimensions exceed maximum manufactured unit size, or if unit size is impracticable to ship in one piece, provide two or more pieces with joints in locations indicated on approved Shop Drawings.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install visual display units until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

1.10 WARRANTY

A. Special Warranty for Porcelain-Enamel Face Sheets: Manufacturer agrees to repair or replace porcelain-enamel face sheets that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Surfaces lose original writing and erasing qualities.
b. Surfaces exhibit crazing, cracking, or flaking.

2. Warranty Period: Life of the building.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: 25 or less.
2. Smoke-Developed Index: 450 or less.

2.2 VISUAL DISPLAY BOARD ASSEMBLY

A. Basis of Design: “Series 1” by Claridge.
B. Basis of Design – Markerboard: “LCS³”.
C. Basis of Design – Markerboard Color: “No. 100 – White”.
D. Basis of Design – Tackboard: “Claridge Cork Bulletin Board” by Claridge.
E. Basis of Design – Tackboard Color: “No. 1100/1106 – Tan”.
F. Basis of Design – Maprail Insert Color: Match Tackboard.

G. Visual Display Board Assembly: Factory fabricated to greatest extent practical.

1. Assembly: Markerboards and Tackboards.
2. Corners: Square.
3. Width: As indicated on Drawings.
4. Height: As indicated on Drawings.
5. Mounting Method: Direct to wall.

H. Markerboard Panel: Porcelain-enamel-faced markerboard panel on core indicated.

1. Color: As indicated by manufacturer's designations above.

I. Tackboard Panel: Natural-cork tackboard panel on core indicated.

1. Color and Pattern: As indicated by manufacturer's designations above.

J. Aluminum Frames and Trim: Fabricated from not less than 0.062-inch (1.57-mm) thick, extruded aluminum; 1-1/2 inch (38 mm) wide minimum.

1. Aluminum Finish: Clear anodic finish.

K. Joints: Make joints only where total length exceeds maximum manufactured length. Fabricate with minimum number of joints, as indicated on approved Shop Drawings.

L. Combination Assemblies: Provide manufacturer's standard exposed trim between abutting sections of visual display panels.

M. Chalktray: Manufacturer's standard; continuous.

1. Box Type: Extruded aluminum with slanted front, grooved tray, and cast-aluminum end closures.

N. Display Rail: Manufacturer's standard, extruded-aluminum display rail with plastic-impregnated-cork insert, end stops,designed to hold accessories.

1. Size: 1 inch (25 mm) high by full length of markerboard portion of visual display unit.
2. Map Hooks and Clips: Two map hooks with flexible metal clips for every 48 inches (1200 mm) of display rail or fraction thereof.
3. Flag Holder: One for each room.
4. Tackboard Insert Color: As indicated by manufacturer's designations.
5. Aluminum Color: Match finish of visual display assembly trim.

2.3 MARKERBOARD PANELS

A. Porcelain-Enamel Markerboard Panels: Balanced, high-pressure, factory-laminated markerboard assembly of three-ply construction, consisting of moisture-barrier backing, core material, and porcelain-enamel face sheet with low-gloss finish. Laminate panels under heat and pressure with manufacturer's standard, flexible waterproof adhesive.

1. MDF Core: 7/16 inch (11 mm) thick; with manufacturer's standard moisture-barrier backing.
2. Laminating Adhesive: Manufacturer's standard moisture-resistant thermoplastic type.

2.4 TACKBOARD PANELS

A. Tackboard Panels:

1. Facing: 1/4-inch (6 mm) thick, natural cork or plastic-impregnated cork.
2. Core: 1/4-inch (6 mm) thick hardboard or particleboard.

2.5 MATERIALS

A. Porcelain-Enamel Face Sheet: PEI-1002, with face sheet manufacturer's standard two- or three-coat process.

B. Natural-Cork Sheet: Seamless, single-layer, compressed fine-grain cork sheet; bulletin board quality; face sanded for natural finish; with surface-burning characteristics indicated.

C. Plastic-Impregnated-Cork Sheet: Seamless, homogeneous, self-sealing sheet consisting of granulated cork, linseed oil, resin binders, and dry pigments that are mixed and calendared onto fabric backing; with washable vinyl finish and integral color throughout; with surface-burning characteristics indicated.

D. Hardboard: ANSI A135.4, tempered.

E. Particleboard: ANSI A208.1, Grade M-1.

F. MDF: ANSI A208.2, Grade 130.

G. Fiberboard: ASTM C208 cellulosic fiber insulating board.

H. Extruded Aluminum: ASTM B221 (ASTM B221M), Alloy 6063.

I. Adhesives for Field Application: Mildew-resistant, non-staining adhesive for use with specific type of panels, sheets, or assemblies; and for substrate application; as recommended in writing by visual display unit manufacturer.

2.6 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM/NOMMA 500 for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.7 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, surface conditions of wall, and other conditions affecting performance of the Work.

B. Examine roughing-in for electrical power systems to verify actual locations of connections before installation of motorized, sliding visual display units.

C. Examine walls and partitions for proper preparation and backing for visual display units.

D. Examine walls and partitions for suitable framing depth where sliding visual display units will be installed.

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

3.2 PREPARATION

A. Comply with manufacturer's written instructions for surface preparation.

B. Clean substrates of substances, such as dirt, mold, and mildew, that could impair the performance of and affect the smooth, finished surfaces of visual display boards.

C. Prepare surfaces to achieve a smooth, dry, clean surface free of flaking, unsound coatings, cracks, defects, projections, depressions, and substances that will impair bond between visual display units and wall surfaces.

D. Prime and finish paint wall surfaces indicated to receive visual display units unless indicated otherwise by visual display unit manufacturer.

3.3 INSTALLATION

A. General: Install visual display surfaces in locations and at mounting heights indicated on Drawings. Keep perimeter lines straight, level, and plumb. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation.

B. Factory-Fabricated Visual Display Board Assemblies: Attach concealed clips, hangers, and grounds to wall surfaces and to visual display board assemblies with fasteners at not more than 16 inches (400 mm) on center. Secure tops and bottoms of boards to walls.

3.4 CLEANING AND PROTECTION

A. Clean visual display units in accordance with manufacturer's written instructions. Attach one removable cleaning instructions label to visual display unit in each room.

B. Touch up factory-applied finishes to restore damaged or soiled areas.

C. Cover and protect visual display units after installation and cleaning.

END OF SECTION 101100

SECTION 101419 – EXTERIOR ILLUMINATED SIGNAGE

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. Exterior illuminated signage.

B. Related Requirements:

1. Section 101423 Interior Signage for interior panel signs and panel signs mounted on exterior of building at entry doors.

1.3 COORDINATION

A. Furnish templates for placement of electrical service embedded in permanent construction by other installers.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product and accessory.

B. Shop Drawings: For exterior illuminated signs.

1. Include fabrication, illumination (LED) and installation details and attachments to other work.
2. Show sign mounting heights, locations of supplementary supports, accessories and any necessary work to be provided by others.
3. Indicate graphic elements and layout for each sign to scale with actual dimensions and sizes indicated.

C. Samples: For each major component of sign assembly in selected color and finish.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer.

B. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.

1.7 FIELD CONDITIONS

A. Field Measurements: Verify locations of electrical service embedded in permanent construction by other installers by field measurements before fabrication, and indicate measurements on Shop Drawings.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Deterioration of finishes beyond normal weathering.
b. Separation or delamination of sheet materials and components.
c. Failure of illumination components.
d. Structural failures of sign assembly.

2. Warranty Period: Five (5) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 EXTERIOR ILLUMINATED SIGNAGE

A. Signage: Illuminated (LED) contour logo sign with offset mount on backplate. Backplate shall be flat and mounted on standoffs anchored to curved, reinforced concrete masonry wall through metal wall panel veneer. Provide uniform faces, sharp corners, and precisely formed lines and profiles, and as follows:

1. Basis of Design – Manufacturer: Harbinger Signs.
2. Contact: Laura Joy, Senior Account Executive, 904.307.7391 (direct), ljoy@harbingersign.com.

2.2 SIGN MATERIALS

A. Aluminum Castings: ASTM B26/B26M, alloy and temper recommended by sign manufacturer for casting process used and for type of use and finish indicated.

B. Aluminum Sheet and Plate: ASTM B209 (ASTM B209M), alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

C. Aluminum Extrusions: ASTM B221 (ASTM B221M), alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

D. Other Sheet Materials: As recommended by manufacturer and approved for specific application indicated.

E. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV and water resistant for colors and exposure indicated.

2.3 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following:

1. Use concealed fasteners and anchors unless indicated to be exposed.
2. For exterior exposure, furnish nonferrous-metal, stainless-steel or hot-dip galvanized devices unless otherwise indicated.
3. Sign Mounting Fasteners:

    a. Projecting Studs: Threaded studs with sleeve spacer, welded or brazed to back of sign material, screwed into back of sign assembly, or screwed into tapped lugs cast integrally into back of sign material, unless otherwise recommended by manufacturer.
    b. Spacer shall hold rear of sign 3/4 inches (19 mm) off face of metal wall panel substrate.

B. Adhesive: As recommended by sign manufacturer.

2.4 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

B. Architect will provide conceptual artwork for sign. Manufacturer shall refine and provide finished artwork to Architect for review and approval as part of the submittal process.

C. Sign depth, stroke and geometry shall be designed such that fabrication may be be sharp, precise and professional.

2.5 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Directional Finishes: Run grain with long dimension of each piece and perpendicular to long dimension of finished trim or border surface unless otherwise indicated.

2.6 ALUMINUM FINISHES

A. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils (0.04 mm). Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish. Acceptable for exposed and concealed finishes at option of manufacturer.

B. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions. Acceptable for exposed and concealed finishes at option of manufacturer.

C. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm). Acceptable for concealed finishes only.

D. Colors: As selected by Architect from coating manufacturer's full range of colors, glosses and sheens.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

B. Verify that sign-support surfaces are within tolerances to accommodate signs without gaps or irregularities between backs of signs and support surfaces unless otherwise indicated.

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

3.2 INSTALLATION

A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.

1. Install sign level, plumb, true to line, and at location and height indicated, with sign surfaces free of distortion and other defects in appearance.
2. Verify that sign surfaces are clean and free of materials or debris that would impair installation.

B. Mounting Methods:

1. Projecting Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.

    a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place spacers on studs, place sign in position, and push until spacers are pinched between sign and substrate, embedding the stud ends in holes. Temporarily support sign in position until adhesive fully sets.

2. Adhesive: Clean bond-breaking materials from substrate surface and remove loose debris. Apply linear beads or spots of adhesive symmetrically to back of sign and of suitable quantity to support weight of sign after cure without slippage. Keep adhesive away from edges to prevent adhesive extrusion as sign is applied and to prevent visibility of cured adhesive at sign edges. Place sign in position, and push to engage adhesive. Temporarily support sign in position until adhesive fully sets.

3.3 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed portions of sign that do not comply with specified requirements.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain sign in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 101419

SECTION 101423 - INTERIOR SIGNAGE

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. Panel signs.
2. Evacuation Plan signs.

B. Related Requirements:

1. Section 101419 Exterior Illuminated Signage for exterior illuminated logo.

1.3 DEFINITIONS

A. Accessible: In accordance with the accessibility standard.

1.4 COORDINATION

A. Furnish templates for placement of sign-anchorage devices embedded in permanent construction by other installers.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For panel signs.

1. Include fabrication and installation details and attachments to other work.
2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
3. Show message list, typestyles, graphic elements, including raised characters and Braille, and layout for each sign at least one quarter actual size.

C. Samples: For each type of sign assembly, exposed component, and exposed finish.

1. Include representative Samples of available typestyles and graphic symbols.

D. Product Schedule: For panel signs. Use same designations indicated on Drawings or specified.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For signs to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer of products.

1.8 FIELD CONDITIONS

A. Field Measurements: Verify locations of anchorage devices embedded in permanent construction by other installers by field measurements before fabrication, and indicate measurements on Shop Drawings.

1.9 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Deterioration of finishes beyond normal weathering.
b. Deterioration of embedded graphic image.
c. Separation or delamination of sheet materials and components.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Accessibility Standard: Comply with applicable provisions in the Florida Building Code – Accessibility (Seventh Edition).

2.2 PANEL SIGNS

A. Panel Sign: Sign with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:

1. Basis of Design: “Series 200A: Sand-Carved” by Mohawk Sign Systems.
2. Sandblasted Plastic-Laminate Sign: Plastic-laminate face laminated to contrasting phenolic core to produce composite sheet.

a. Composite-Sheet Thickness: 0.125 inch (3.18 mm) minimum.
b. Sandblasted Graphics: Characters formed by removing background plastic-laminate face sheet around characters to expose contrasting phenolic core.
c. Plastic-Laminate Color and Pattern: As selected by Architect from manufacturer's full range.
d. Core Color: As selected by Architect from manufacturer's full range.
e. Color Intent: White characters on dark background.

3. Sign-Panel Perimeter: Finish edges smooth.

a. Edge Condition: Square cut.
b. Corner Condition in Elevation: Rounded to radius indicated.

4. Mounting: Surface mounted to wall with countersunk flathead through fasteners on masonry walls and two-face tape on hollow-metal door frames, aluminum door frames and glass surfaces.
5. Text and Typeface: Accessible raised characters and Braille with font and variable content as indicated on Drawings. Finish raised characters to contrast with background color, and finish Braille to match background color.
6. Flatness Tolerance: Sign shall remain flat or uniformly curved under installed conditions as indicated on Drawings and within a tolerance of plus or minus 1/16 inch (1.5 mm) measured diagonally from corner to corner.

2.3 EVACUATION PLAN SIGNS

A. Panel Sign: Sign with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:

1. Basis of Design: “Series 300” by Mohawk Sign Systems.
2. Laminated-Sheet Sign: Clear, non-glare acrylic face sheet laminated over subsurface graphics to acrylic backing sheet to produce composite sheet.

a. Composite-Sheet Thickness: 0.125 inch (3.18 mm) minimum.
b. Subsurface Graphics: Full color image. Graphics will be unique for each sign and provided by Architect.

3. Sign-Panel Perimeter: Finish edges smooth.

a. Edge Condition: Square cut.
b. Corner Condition in Elevation: Rounded to radius indicated.

4. Mounting: Surface mounted to wall with countersunk flathead through fasteners.
5. Surface Finish and Applied Graphics:

a. Integral Acrylic Sheet Color: As selected by Architect from full range of industry colors.
b. Color Intent: Red, blue and black graphics on white background.
c. Photo-Image Graphics: Manufacturer's standard multicolor, halftone or dot-screen image.

6. Text and Typeface: Text and typeface as selected by Architect from manufacturer's full range and variable content as scheduled.

7. Flatness Tolerance: Sign shall remain flat or uniformly curved under installed conditions as indicated on Drawings and within a tolerance of plus or minus 1/16 inch (1.5 mm) measured diagonally from corner to corner.

2.4 PANEL-SIGN MATERIALS

A. Acrylic Sheet: ASTM D4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).

B. Plastic-Laminate Sheet: NEMA LD 3, general-purpose HGS grade, 0.048-inch (1.2-mm) nominal thickness.

C. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV and water resistant for colors and exposure indicated.

2.5 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following unless otherwise indicated:

1. Exposed Metal-Fastener Components, General:

a. Fastener Heads: For nonstructural connections, use flathead or oval countersunk screws and bolts with tamper-resistant spanner-head or one-way-head slots unless otherwise indicated.

2. Sign Mounting Fasteners:

a. Through Fasteners: Exposed metal fasteners matching sign finish, with type of head indicated, and installed in predrilled holes.

B. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch (1.14 mm) thick, with adhesive on both sides.

2.6 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

B. Sandblasted Graphics – Panel Signs: Machine sandblast character backgrounds into sign surface to produce precisely formed raised copy and graphics to a uniform height.

1. Plastic Laminate: Sandblast through exposed face ply of plastic-laminate sheet to expose contrasting core ply.

C. Subsurface-Applied Graphics – Evacuation Plan Signs: Apply graphics to back face of clear face-sheet material to produce precisely formed image. Image shall be free of rough edges. Provide contrasting color background on base sheet.

2.7 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Verify that sign-support surfaces are within tolerances to accommodate signs without gaps or irregularities between backs of signs and support surfaces unless otherwise indicated.

C. Verify that anchorage devices embedded in permanent construction are correctly sized and located to accommodate signs.

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

3.2 INSTALLATION

A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.

1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
2. Install signs so they do not protrude or obstruct according to the accessibility standard.
3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.

B. Accessible Signage: Install in locations on walls as indicated on Drawings.

C. Mounting Methods:

1. Through Fasteners: Drill holes in substrate using predrilled holes in sign as template. Countersink holes in sign if required. Place sign in position and flush to surface. Install through fasteners and tighten.
2. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position, and push to engage tape adhesive.

3.3 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 101423

SECTION 102113 - PLASTIC TOILET COMPARTMENTS

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. Solid-plastic toilet compartments configured as toilet enclosures and urinal screens.

B. Related Requirements:

1. Section 061000 Rough Carpentry for blocking overhead support of floor-and-ceiling-anchored compartments and overhead support of post-to-ceiling screens.
2. Section 102800 Restroom Accessories for accessories mounted on toilet compartments.

1.3 COORDINATION

A. Coordinate requirements for overhead supports, blocking, reinforcing, and other supports concealed within wall and ceiling.

1.4 ACTION SUBMITTALS

A. Product Data:

1. Solid-plastic toilet compartments:

a. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for toilet compartments.

B. Shop Drawings: For solid-plastic toilet compartments.

1. Include plans, elevations, sections, details, and attachment details.
2. Show locations of reinforcement and/or cutouts for compartment-mounted toilet accessories.
3. Show locations of centerlines of toilet fixtures.
4. Show locations of floor drains.
5. Show overhead support or bracing locations.

C. Samples for Initial Selection: Manufacturer's standard color sheets, showing full range of available colors for each type of toilet compartment material indicated.

1. Include Samples of hardware and accessories involving material and color selection.

D. Samples for Verification: Actual sample of finished products for each type of toilet compartment indicated.

1. Size: 6-inch (152 mm) square, of same thickness indicated for Work.
2. Include each type of hardware and accessory.

E. Product Schedule: For toilet compartments, prepared by or under the supervision of supplier, detailing location and selected colors for toilet compartment material.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For toilet compartments.

1.6 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of toilet fixtures, walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements, and coordinate before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire Performance: Tested in accordance with, and pass the acceptance criteria of, NFPA 286.

B. Regulatory Requirements: Comply with applicable provisions in Florida Building Code – Accessibility (Seventh Edition) for toilet compartments designated as accessible.

2.2 SOLID-PLASTIC TOILET COMPARTMENTS

A. Basis of Design – Manufacturer: Scranton Products (Santana).

B. Toilet-Enclosure Style: Overhead braced, floor anchored.

C. Urinal-Screen Style: Wall hung, floor anchored with post (pilaster) to ceiling.

D. Door, Panel, Screen, and Pilaster Construction: Solid, high-density polyethylene (HDPE) panel material, not less than 1 inch (25 mm) thick, seamless, with eased edges, and with homogenous color and pattern throughout thickness of material.

1. Heat-Sink Strip: Manufacturer's standard continuous, extruded-aluminum or stainless steel strip fastened to exposed bottom edges of solid-plastic components to hinder malicious combustion.
2. Color and Pattern: One color and pattern in each room as selected by Architect from manufacturer's full range.

E. Pilaster Shoes: Manufacturer's standard design; stainless steel.

F. Urinal-Screen Post: Manufacturer's standard post design of material matching the thickness and construction of pilasters; with stainless steel shoe and stainless steel sleeve (cap).

G. Brackets (Fittings):

1. Full-Height (Continuous) Type: Manufacturer's standard design; stainless steel.

2.3 HARDWARE AND ACCESSORIES

A. Hardware and Accessories, Heavy Duty: Manufacturer's heavy-duty operating hardware and accessories.

1. Hinges: Manufacturer's minimum 0.062-inch (1.59 mm) thick stainless steel paired, self-closing type that can be adjusted to hold doors open at any angle up to 90 degrees, allowing emergency access by lifting door. Mount with through bolts.
2. Latch and Keeper: Manufacturer's heavy-duty, surface-mounted, cast-stainless steel latch unit, designed to resist damage due to slamming, with combination rubber-faced door strike and keeper, and with provision for emergency access. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible. Mount with through bolts.
3. Coat Hook: Manufacturer's heavy-duty combination cast-stainless steel hook and rubber-tipped bumper, sized to prevent inswinging door from hitting compartment-mounted accessories. Mount with through bolts.
4. Door Bumper: Manufacturer's heavy-duty, rubber-tipped, cast-stainless steel bumper at outswinging doors. Mount with through bolts.
5. Door Pull: Manufacturer's heavy-duty, cast-stainless steel pull at outswinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at compartments designated as accessible. Mount with through bolts.

B. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile and in manufacturer's standard finish.

C. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, finished to match the items they are securing, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless steel, hot-dip galvanized steel, or other rust-resistant, protective-coated steel compatible with related materials.

2.4 MATERIALS

A. Aluminum Castings: ASTM B26/B26M.

B. Aluminum Extrusions: ASTM B221 (ASTM B221M).

C. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304, stretcher-leveled standard of flatness.

D. Stainless Steel Castings: ASTM A743/A743M.

2.5 FABRICATION

A. Fabrication, General: Fabricate toilet compartment components to sizes indicated. Coordinate requirements and provide cutouts for through-partition toilet accessories where required for attachment of toilet accessories.

B. Overhead-Braced Units: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters to suit floor conditions. Provide shoes at pilasters to conceal supports and leveling mechanism.

C. Floor-Anchored Units: Provide manufacturer's standard corrosion-resistant anchoring assemblies with leveling adjustment nuts at pilasters for structural connection to floor. Provide shoes at pilasters to conceal anchorage.

D. Urinal-Screen Posts: Provide manufacturer's standard corrosion-resistant anchoring assemblies with leveling adjustment nuts at tops and bottoms of posts. Provide shoes and sleeves (caps) at posts to conceal anchorage.

E. Door Size and Swings: Unless otherwise indicated, provide 24-inch (610 mm) wide, inswinging doors for standard toilet compartments and 36-inch (914 mm) wide, outswinging doors with a minimum 32-inch (813 mm) wide, clear opening for compartments designated as accessible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for fastening, support, alignment, operating clearances, and other conditions affecting performance of the Work.

1. Confirm location and adequacy of blocking and supports required for installation.

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

3.2 INSTALLATION OF PLASTIC TOILET COMPARTMENTS

A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.

1. Maximum Clearances:

a. Pilasters and Panels: 1/2 inch (13 mm).
b. Panels and Walls: 1 inch (25 mm).

2. Full-Height (Continuous) Brackets: Secure panels to walls and to pilasters with full-height brackets.

a. Locate bracket fasteners, so holes for wall anchors occur in masonry or tile joints.
b. Align brackets at pilasters with brackets at walls.

B. Overhead-Braced Units: Secure pilasters to floor and level, plumb, and tighten. Set pilasters with anchors penetrating not less than 1-3/4 inches (44 mm) into structural floor unless otherwise indicated in manufacturer's written instructions. Secure continuous head rail to each pilaster with no fewer than two fasteners. Hang doors to align tops of doors with tops of panels and adjust, so tops of doors are parallel with overhead brace when doors are in closed position.

C. Floor-Anchored Units: Set pilasters with anchors penetrating not less than 2 inches (51 mm) into structural floor unless otherwise indicated in manufacturer's written instructions. Level, plumb, and tighten pilasters. Hang doors and adjust, so tops of doors are level with tops of pilasters when doors are in closed position.

D. Urinal Screens: Attach with anchoring devices to suit supporting structure. Set units level and plumb, rigid, and secured to resist lateral impact.

3.3 ADJUSTING

A. Hardware Adjustment: Adjust and lubricate hardware according to hardware manufacturer's written instructions for proper operation. Set hinges on inswinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on outswinging doors to return doors to fully closed position.

END OF SECTION 102113

SECTION 102800 - RESTROOM ACCESSORIES

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. Restroom accessories.
2. Custodial accessories.

1.3 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

B. Deliver inserts and anchoring devices set into substrates as required to prevent delaying the Work.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.

B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

1. Identify locations using room designations indicated.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For accessories to include in maintenance manuals.

1.6 WARRANTY

A. Manufacturer's Special Warranty for Mirrors: Manufacturer agrees to repair or replace mirrors that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, visible silver spoilage defects.
2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 OWNER-FURNISHED MATERIALS

A. Owner-Furnished Materials: Owner shall furnish for Contractor's installation certain restroom accessories as indicated on Restroom Accessories Schedule herein. Owner shall furnish and install certain restroom accessories as indicated on Restroom Accessories Schedule herein.

2.2 RESTROOM ACCESSORIES SCHEDULE

A. Source Limitations: Obtain each type of public-use washroom accessory from single source from single manufacturer.

B. Basis of Design for each accessory is indicated on Restroom Accessories Schedule.

C. Restroom Accessories Schedule:

Item No.	Item Description	Owner Furnished	Owner Installed	Contractor Furnished	Contractor Installed	Manufacturer	Model	Comments
1	Toilet Tissue Dispensers - Surface Mtd	X			X	Georgia Pacific	56784	Horizontal Double Roll
2	Paper Towel Dispensers - Lavatories - Surface Mtd	X			X	Georgia Pacific	59489	Mechanical
3	Paper Towel Dispensers - Counter Sinks - Surface Mtd	X			X	Georgia Pacific	59489	Mechanical
4	Electric Hand Dryers - Surface Mtd			X	X	World Dryer	L-973	Brushed Stainless Stl
5	Soap Dispensers - 1250 ml - Surface Mtd	X			X	Buckeye International	99012001	Symmetry Line
6	Hand Sanitizer Dispensers - 1250 ml - Surface Mtd	X			X	Buckeye International	99600001	Symmetry Line
7	Sanitary Napkin Disposals - Surface Mtd			X	X	Bradley	4722-15	Surface Mounted
8	Free Standing Trash Cans	X	X			-	-	Portable
9	Mirrors - Framed - 18" x 30"			X	X	Bradley	781-18-30-2	Tempered Glass
10	Utility Hook - Surface Mtd			X	X	Bradley	9114	Single Hook
11	Grab Bars - Water Closet - Rear - 36 Inches			X	X	Bradley	812-001-36-2	Peened Safety Grip
12	Grab Bars - Water Closet - Side - 42 Inches			X	X	Bradley	812-001-42-2	Peened Safety Grip
13	Mop Holders			X	X	Fiat	889-CC	Stainless
14	Custodial Vending Machines	X	X			Buckeye International	42900000	Eco Pro Proportioner

NOTES

A.	Install one toilet tissue dispenser at each water closet.
B.	Install one paper towel dispenser at each wall hung lavatory in Restroom 11-07A & Restroom 11-07B.
C.	Install two paper towel dispensers where indicated in each group Restroom 11-05 & Restroom 11-06.
D.	Install one electric hand dryer in the accessible stall of Restroom 11-05 and one electric hand dryer in the accessible stall of Restroom 11-06.
E.	Install one paper towel dispenser at counter mounted sink in Teacher Planning 11-07.
F.	Install one paper towel dispenser in Science Demonstration 11-09, Science Demonstration 11-13 & Science Demonstration 11-14.
G.	Install two paper towel dispensers in Science Lab 11-10.
H.	Install one soap and one hand sanitizer dispenser at each wall hung lavatory, each counter mounted sink in Teacher Planning 11-07 and each floor sink.
I.	Install one soap and one hand sanitizer dispenser in Science Demonstration 11-09, Science Demonstration 11-13 & Science Demonstration 11-14.
J.	Install six soap and six hand sanitizer dispensers in Science Lab 11-10.
K.	Provide sanitary napkin disposals at water closets in Restroom 11-06, Restroom 11-07A & Restroom 11-07B.
L.	Provide 18" x 30" mirrors at each wall hung lavatory.
M.	Provide utility hook centered on restroom side of door in Restroom 11-07A & Restroom 11-07B.
N.	Mop holders to be provided as part of plumbing fixture package. Install one at each floor sink.
O.	Install all accessories as indicated on drawings. All accessories shall be installed at accessible locations.
P.	Where mounting conflicts are found to exist, contact Architect for direction.

2.3 MATERIALS

A. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304, 0.031-inch (0.8-mm) minimum nominal thickness unless otherwise indicated.

B. Brass: ASTM B19, flat products; ASTM B16/B16M, rods, shapes, forgings, and flat products with finished edges; or ASTM B30, castings.

C. Steel Sheet: ASTM A1008/A1008M, Designation CS (cold rolled, commercial steel), 0.036-inch (0.9-mm) minimum nominal thickness.

D. Galvanized-Steel Sheet: ASTM A653/A653M, with G60 (Z180) hot-dip zinc coating.

E. Galvanized-Steel Mounting Devices: ASTM A153/A153M, hot-dip galvanized after fabrication.

F. Fasteners: Screws, bolts, and other devices of same material as accessory unit, unless otherwise recommended by manufacturer or specified in this Section, and tamper and theft resistant where exposed, and of stainless or galvanized steel where concealed.

G. Chrome Plating: ASTM B456, Service Condition Number SC 2 (moderate service).

H. Mirrors: Shall be fully tempered safety glass, nominal 6 mm in thickness minimum.

2.4 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

1. Remove temporary labels and protective coatings.

B. Grab Bars: Install to comply with code required structural-performance requirements.

3.2 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Clean and polish exposed surfaces according to manufacturer's written instructions.

END OF SECTION 102800

SECTION 104413 - FIRE EXTINGUISHER CABINETS

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. Fire-protection cabinets for the following:

a. Portable fire extinguishers.

B. Related Requirements:

1. Section 104416 Fire Extinguishers for portable, hand-carried fire extinguishers accommodated by fire-protection cabinets.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Show door hardware, cabinet type, trim style, and panel style. Include roughing-in dimensions and details showing semi-recessed method and relationships of box and trim to surrounding construction.

B. Shop Drawings: For fire-protection cabinets.

1. Include plans, elevations, sections, details, and attachments to other work.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For fire-protection cabinets to include in maintenance manuals.

1.5 COORDINATION

A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

B. Coordinate sizes and locations of fire-protection cabinets with wall depths.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain fire-protection cabinets and accessories from single source from single manufacturer.

2.2 FIRE-PROTECTION CABINET

A. Cabinet Type: Suitable for fire extinguisher.

1. Basis of Design: “2409-R3” by Larsen’s Manufacturing Company.

B. Cabinet Construction: Nonrated.

C. Cabinet Material: Cold-rolled steel sheet.

D. Semi-recessed Cabinet: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).

1. Rolled-Edge Trim: 2-1/2-inch (64-mm) backbend depth.

E. Cabinet Trim Material: Stainless steel sheet.

F. Door Material: Stainless steel sheet.

G. Door Style: Fully glazed panel with frame.

H. Door Glazing: Tempered float glass (clear).

I. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.

1. Provide projecting door pull and friction latch.
2. Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.

J. Accessories:

1. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated.

a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER."

1) Location: Applied to cabinet door.
2) Application Process: Die cut, surface applied.
3) Lettering Color: Red.
4) Orientation: “Type A” per Larsen’s Manufacturing Company options.

K. Materials:

1. Cold-Rolled Steel: ASTM A1008/A1008M, Commercial Steel (CS), Type B.

    a. Finish: Baked enamel, TGIC polyester powder coat, HAA polyester powder coat, epoxy powder coat, or polyester/epoxy hybrid powder coat, complying with AAMA 2603.
    b. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
    c. Color: White.

2. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304.

    a. Finish: ASTM A480/A480M No. 4 directional satin finish.

3. Tempered Float Glass: ASTM C1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).

2.3 FABRICATION

A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.

1. Weld joints and grind smooth.
2. Miter corners and grind smooth.
3. Provide factory-drilled mounting holes.
4. Prepare doors and frames to receive locks.

B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles.

1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch (13 mm) thick.
2. Fabricate door frames of one-piece construction with edges flanged.
3. Miter and weld perimeter door frames and grind smooth.

C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.4 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's AMP 500, "Metal Finishes Manual for Architectural and Metal Products," for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces of fire-protection cabinets from damage by applying a strippable, temporary protective covering before shipping.

C. Finish fire-protection cabinets after assembly.

D. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine roughing-in for hose and cabinets to verify actual locations of piping connections before cabinet installation.

B. Examine walls and partitions for suitable framing depth and blocking where semi-recessed cabinets will be installed.

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

3.2 PREPARATION

A. Prepare recesses for semi-recessed fire-protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION

A. General: Install fire-protection cabinets in locations and at mounting heights indicated or, if not indicated, at height indicated below:

1. Fire-Protection Cabinets: 42 inches (1067 mm) minimum to 48 inches (1219 mm) maximum above finished floor to top of fire extinguisher.
2. Set cabinet to coordinate with masonry coursing and minimize cutting of masonry.

B. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.

3.4 ADJUSTING AND CLEANING

A. Remove temporary protective coverings and strippable films, if any, as fire-protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.

B. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.

C. On completion of fire-protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.

D. Touch up marred finishes, or replace fire-protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire-protection cabinet and mounting bracket manufacturers.

E. Replace fire-protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 104413

SECTION 104416 - FIRE EXTINGUISHERS

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 portable, hand-carried fire extinguishers and mounting brackets for fire extinguishers not otherwise indicated to be installed in fire extinguisher cabinets. Fire extinguisher cabinets shall be Contractor furnished and Contractor installed.

B. Owner-Furnished Material: Hand-carried fire extinguishers and brackets shall be Owner furnished and Owner installed.

C. Related Requirements:

1. Section 104413 Fire Extinguisher Cabinets.

1.3 COORDINATION

A. Coordinate type and capacity of fire extinguishers with fire-protection cabinets to ensure fit and function.

B. Coordinate installation of fire extinguishers with Owner prior to Substantial Completion.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 104416

SECTION 107316 – ALUMINUM WALKWAY COVERS

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. Aluminum walkway canopy systems.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: For aluminum canopy systems. Include plans, elevations, sections, details, and attachments to other work drawn to scale.

1. Include details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
2. Show connection to adjacent construction where required including weather protection and flashing of such connections.
3. Identify items furnished for installation by others such as column sleeves (Styrofoam block-outs) and anchor bolts, if required.

C. Calculations: Provide design calculations, loads, reactions for proposed aluminum canopy system.

D. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.

E. Delegated-Design Submittal: For aluminum canopy system include rational design analysis data signed and sealed by the qualified professional engineer responsible for their preparation. Engineer shall be actively licensed in the State of Florida and submittal shall be sealed per Florida Statues Section 471.025 (1).

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data:

1. For Installer.
2. For professional engineer's experience with providing delegated-design engineering services of the kind indicated, including documentation that engineer is licensed in the state in which Project is located.

B. Product Test Reports: For aluminum canopy systems, for tests performed by a qualified testing agency.

C. Florida Product Approvals for aluminum canopy system components not included in rational design analysis.

D. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For aluminum canopy systems to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: At entity with at least ten (10) years experience in the design, fabrication and erection of extruded aluminum canopy systems similar to the proposed system.

B. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer and that has no less than three (3) years experience successfully installing aluminum canopy systems substantially similar to the proposed system.

C. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.

1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of aluminum canopy systems that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures, including, but not limited to, excessive deflection.

2. Warranty Period: Two (2) years from date of Substantial Completion.

B. Special Finish Warranty, Anodized Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of anodized finishes within specified warranty period.

1. Warranty Period: Five (5) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain all components of aluminum canopy system, including framing and accessories, from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 Quality Requirements, to design aluminum-framed entrances and storefronts.

B. General Performance:

1. Design aluminum canopy systems in accordance with Aluminum Association's The Aluminum Design Manual 2000, Specifications & Guidelines for Aluminum Structures.

C. Structural Loads:

1. Wind Loads and Design Pressures: As indicated on Drawings.

D. Windborne-Debris Impact Resistance: Not Required.

E. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes.

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.3 ALUMINUM CANOPY SYSTEMS

A. Basis of Design – Manufacturer: Peachtree Protective Covers, Hiram, Georgia.

2.4 MATERIALS

A. Aluminum Members: Extruded aluminum, ASTM B221 (ASTM B221M) 6063 alloy, T6 temper.

B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B221 (ASTM B221M) 6063 alloy, T6 temper.

C. Fasteners: Aluminum, 18-8 stainless steel or 300 series stainless steel.

D. Grout:

1. Portland Cement: ASTM C150, Type I.
2. Sand: ASTM C404.
3. Water: Potable.

E. Aluminum Flashing: ASTM B209, Type 3003 H14, 0.040 inch, minimum.

F. Protective Coating for Aluminum Embedded in Concrete or Grout: Clear acrylic.

G. Gaskets: Dry seal santoprene pressure type.

2.5 FABRICATION

A. General:

1. General system configuration is indicated on the Drawings.
2. Member sizes and quantities indicated are minimums. Larger, thicker, stronger members in greater quantities may be required. Actual members shall be per manufacturer's engineering design but in no case shall be smaller, thinner, weaker or in less quantity than indicated on the Drawings.
3. Shop Assembly: Assemble components in shop to greatest extent possible to minimize field assembly.
4. Welded Assembly: All welded assembly.

    a. Welding: In accordance with ANSI / AWS D1.2.

5. Provide aluminum member profiles that are consistent, straight, and free of defects or deformations.
6. Join members with accurately fitted joints.
7. Accommodate for thermal and mechanical movements.
8. Conceal fasteners, anchors, and connection devices to greatest extent possible.
9. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

B. Bent Construction:

1. Factory assemble beams to columns to form one-piece rigid bents.
2. Welds to be smooth and uniform with 100 percent penetration.
3. Field welding not permitted.
4. Rigid mechanical joints acceptable where welding is not practical and where justifiable by engineering calculations.

C. Deck Construction:

1. Fabricate from extruded profiles that interlock in a self-flashing manner.
2. Positively fasten interlocking joints creating a monolithic unit.
3. Assemble deck with sufficient camber to offset dead load deflection.
4. Deck system to allow for live loading such as routine service access.

5. Provide welded plate closures at deck ends.
6. Deck Profiles: Cap and Pan.

D. Columns:

1. Radius cornered tubular extrusions.
2. Cutout and internal diverter for drainage where indicated. Ease edges of cutouts.
3. Circular downspout openings in columns not acceptable.
4. Provide key openings in portions of columns installed in concrete or grout.

E. Beams:

1. Radius cornered, open top, tubular extrusions.
2. Thickened top edges for strength and profiled to receive deck members.

F. Fascia:

1. Manufacturer's standard profile featuring vertical outer face.
2. Splice fascia as required. Locate splices in line with bents.
3. Fasten fascia to concealed and / or non-vertical surfaces.

2.6 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

1. Mechanical Finish: Nonspecular, as fabricated.
2. Chemical Finish: Etched, medium matte.
3. Anodic Coating: Architectural Class I, clear.

2.7 GROUT MIXES

A. Grout Mix Proportions: Mix grout as follows unless otherwise indicated by canopy manufacturer or structural engineer.

1. One (1) part Portland cement to three (3) parts sand. Add water to produce a pouring consistency.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

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

3.2 INSTALLATION, GENERAL

A. Comply with manufacturer's written instructions.

B. Do not install damaged components.

C. Fit joints to produce hairline joints free of burrs and distortion.

D. Install grout in downspout columns below level of water discharge to prevent standing water in columns.

E. Provide weep holes at tops of non-draining columns for condensation removal.

F. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by coating contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.

G. Install components plumb and true in alignment with established lines and grades.

H. Clean canopy system promptly after erection.

I. Protect canopy system during and after construction until acceptance at Substantial Completion.

J. Replace aluminum canopy components that have been damaged or have deteriorated beyond successful minor repair.

3.3 ERECTION TOLERANCES

A. Install aluminum canopy systems true to line, level and plumb and in compliance with the following maximum tolerances:

1. Plumb: 1/8 inch in 10 feet (3.2 mm in 3 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).
2. Level: 1/8 inch in 20 feet (3.2 mm in 6 m); 1/4 inch in 40 feet (6.35 mm in 12.2 m).

END OF SECTION 084113

SECTION 113013 - APPLIANCES

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. Refrigeration appliances.

B. Owner-Furnished Material:

1. Refrigeration appliance shall be Owner furnished and Owner installed. Contractor shall coordinate electrical requirements, plumbing requirements and casework configurations to accommodate Owner furnished appliance.

PART 2 - PRODUCTS

2.1 REFRIGERATOR/FREEZERS

A. Refrigerator/Freezer:

1. Type: Freestanding.
2. Dimensions:

a. Architect will advise after Owner submits order for unit.

3. General Features:

a. Built-in icemaker.

4. ENERGY STAR: Appliance shall qualify for the EPA/DOE ENERGY STAR product-labeling program.

PART 3 - EXECUTION (NOT USED)

END OF SECTION 113013

SECTION 122113 - HORIZONTAL LOUVER BLINDS

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. Horizontal louver blinds with aluminum slats.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For horizontal louver blinds, include fabrication and installation details.

C. Samples: For each exposed product and for each color and texture specified, 12 inches (300 mm) long.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For horizontal louver blinds to include in maintenance manuals.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver horizontal louver blinds in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Do not install horizontal louver blinds until construction and wet-work and finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Where horizontal louver blinds are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware of operable glazed units through entire operating range. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain horizontal louver blinds from single source from single manufacturer.

2.2 HORIZONTAL LOUVER BLINDS, ALUMINUM SLATS

A. Basis of Design: “S3000” by SWF Contract.

B. Louver Blind Locations:

1. Exterior aluminum window openings for window type “H” as indicated.

C. Slats: Aluminum; alloy and temper recommended by producer for type of use and finish indicated; with crowned profile and radius corners.

1. Width: 1 inch (25 mm).
2. Thickness: Not less than 0.008 inch (0.20 mm).
3. Spacing: 21.5 mm.
4. Finish: Ionized antistatic, dust-repellent, baked polyester finish.
5. Features:

a. Lift-Cord Rout Holes: Minimum size required for lift cord and located near back (outside) edge of slat to maximize slat overlap and minimize light gaps between slats.

D. Headrail: Formed steel or extruded aluminum; long edges returned or rolled. Headrails fully enclose operating mechanisms on three sides.

1. Capacity: One blind(s) per headrail unless otherwise indicated.
2. Ends: Capped or plugged.
3. Manual Lift Mechanism:

a. Lift-Cord Lock: Variable; stops lift cord at user-selected position within blind full operating range.
b. Operator: Extension of lift cord(s) through lift-cord lock mechanism to form cord pull.

4. Manual Tilt Mechanism: Enclosed worm-gear mechanism and linkage rod that adjusts ladders.

a. Tilt: Full.
b. Operator: Corrosion-resistant steel rod.
c. Over-Rotation Protection: Manufacturer's detachable operator or slip clutch to prevent over rotation of gear.

5. Manual Lift-Operator and Tilt-Operator Lengths: Full length of blind when blind is fully closed.
6. Manual Lift-Operator and Tilt-Operator Locations: Manufacturer's standard unless otherwise indicated.
7. Integrated Headrail/Valance: Curved face.

E. Bottom Rail: Formed-steel or extruded-aluminum tube that secures and protects ends of ladders and lift cords and has plastic- or metal-capped ends.

1. Type: Manufacturer's standard.

F. Lift Cords: Manufacturer's standard braided cord.

G. Ladders: Evenly spaced across headrail at spacing that prevents long-term slat sag.

1. Type: Braided cord.

H. Mounting Brackets: With spacers and shims required for blind placement and alignment indicated.

1. Type: Overhead.
2. Intermediate Support: Provide intermediate support brackets to produce support spacing recommended by blind manufacturer for weight and size of blind.

I. Colors, Textures, Patterns, and Gloss:

1. Slats: Basis of Design – Finish: “121 Brushed Aluminum” by SWF Contract.
2. Components: Provide rails, cords, ladders, and materials exposed to view matching or coordinating with slat color unless otherwise indicated.

2.3 HORIZONTAL LOUVER BLIND FABRICATION

A. Product Safety Standard: Fabricate horizontal louver blinds to comply with WCMA A 100.1 including requirements for corded, flexible, looped devices; lead content of components; and warning labels.

B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F (23 deg C):

1. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which blind is installed less 1/4 inch (6 mm) per side or 1/2 inch (13 mm) total, plus or minus 1/8 inch (3.1 mm). Length equal to head-to-sill dimension of opening in which blind is installed less 1/4 inch (6 mm), plus or minus 1/8 inch (3.1 mm).

C. Concealed Components: Non-corrodible or corrosion-resistant-coated materials.

1. Lift-and-Tilt Mechanisms: With permanently lubricated moving parts.

D. Mounting and Intermediate Brackets: Designed for removal and reinstallation of blind without damaging blind and adjacent surfaces, for supporting blind components, and for bracket positions and blind placement indicated.

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

F. Color-Coated Finish:

1. Metal: For components exposed to view, apply manufacturer's standard baked finish complying with manufacturer's written instructions for surface preparation including pretreatment, application, baking, and minimum dry film thickness.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance of the Work.

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

3.2 INSTALLATION

A. Install horizontal louver blinds level and plumb, aligned and centered on openings, and aligned with adjacent units according to manufacturer's written instructions.

1. Locate so exterior slat edges are not closer than 2 inches (51 mm) from interior faces of glass and not closer than 1-1/2 inches (38 mm) from interior faces of glazing frames through full operating ranges of blinds.
2. Install mounting and intermediate brackets to prevent deflection of headrails.
3. Install with clearances that prevent interference with adjacent blinds, adjacent construction, and operating hardware of glazed openings, other window treatments, and similar building components and furnishings.

3.3 ADJUSTING

A. Adjust horizontal louver blinds to operate free of binding or malfunction through full operating ranges.

3.4 CLEANING AND PROTECTION

A. Clean horizontal louver blind surfaces after installation according to manufacturer's written instructions.

B. Provide final protection and maintain conditions in a manner acceptable to manufacturer and Installer that ensures that horizontal louver blinds are without damage or deterioration at time of Substantial Completion.

C. Replace damaged horizontal louver blinds that cannot be repaired in a manner approved by Architect before time of Substantial Completion.

END OF SECTION 122113

SECTION 123500 - LABORATORY CASEWORK AND WORK SURFACES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Casework for Intermediate/Middle Science Labs and support spaces.
2. Casework for Intermediate/Middle Science Demonstration and support spaces.
3. Work Surfaces for Casework indicated above.
4. Integral Sinks in Work Surfaces indicated above.
5. Fixtures for water services.
6. Safety Glasses Storage Cabinets.
7. Accessories as required for complete, fully operational systems indicted above.

1.2 RELATED DIVISIONS AND SECTIONS

A. Section 061000 Rough Carpentry: Grounds/blocking in contact with concrete or masonry to adequately support wall and floor mounted casework provided and installed in this section.

B. Section 096513 Resilient Base and Accessories: Base applied to casework as part of flooring system.

C. Division 22 – Plumbing: Emergency eyewashes and material and final connections for rough-ins, drain lines, vents, traps, tailpieces, service piping, shut-off valves, dilution tanks and miscellaneous accessories for laboratory sinks, faucets and service fixtures that are part of laboratory casework.

D. Division 26 – Electrical: Material and final connections for electrical rough-ins, junction boxes, conduit, wiring and accessories for laboratory casework electrical service fixtures.

1.3 REFERENCES

A. ANSI/ISEA Z358.1-2014: Emergency Eyewash and Shower Equipment.

B. Florida Building Code – Accessibility (Seventh Edition).

C. NFPA 30: Flammable and Combustible Liquids Code.

D. NFPA 45: Standard for Fire Protection for Laboratories Using Chemicals.

E. SEFA: Scientific Equipment and Furniture Association Recommended Practices. Desk Reference, 5th Edition, 2014.

1. SEFA 2-2010: Recommended Practices for Installation.
2. SEFA 3-2010: Recommended Practices for Work Surfaces.
3. SEFA 7-2010: Recommended Practices for Laboratory Service Fixtures.
4. SEFA 8-W-2014: Recommended Practices for Wood Laboratory Grade Casework.

1.4 SUBMITTALS

A. Refer to Section 013300 Submittals for Submittal Procedures.

B. Shop Drawings: Submit shop drawings indicating plans, rough-ins, elevations of all exposed surfaces, sections, service chases, work surface details, sinks and service fixtures, installation details, and location of grounds/blocking required for adequate casework support.

C. Manufacturer's Data:

1. Provide data indicating compliance with SEFA 8-W-2014, Laboratory Furniture Certificate of Performance Test from SEFA approved, Independent Test Facility.
2. Provide Test Report from SEFA approved, Independent Test Facility, certifying that wood casework finish complies with SEFA 8-W-2014, Chemical Resistance Testing requirements.

D. Samples for Initial Selection: Submit one (1) set of manufacturer's standard color chips for wood casework.

E. Samples for Approval: One pair of samples for each type of work surface.

1.5 QUALITY ASSURANCE

A. All laboratory casework, including cabinetry, work surfaces, sinks, service fixtures and fittings and accessories shall be obtained from the same source.

B. Provide casework manufactured and assembled in the USA.

1.6 PROJECT SITE CONDITIONS

A. Additional Conditions:

1. Required grounds/blocking for reinforcement of wall-mounted cabinets must be in place.
2. If floor tile is required under casework, it must be in place.
3. Overhead ductwork, ceiling grid, tile, and light fixtures must be in place.
4. Wet operations should be complete.
5. Painting should be complete.
6. Service lines for water must be flushed clean of dirt and chips, capped and tested for leaks prior to final connections.
7. Electrical service and lighting should be available in each room where casework will be installed.

B. Field Dimensions: Confirm prior to product fabrication. General Contractor shall provide guaranteed dimensions if actual field dimensions are not available in time frame necessary to meet lab casework production lead times.

1.7 DELIVERY, STORAGE, HANDLING

A. Delivery: Products shall be delivered to the project site in undamaged condition, unloaded by casework installer, distributed to required rooms, unpackaged, and made ready for installation. As

a prerequisite for delivery, building shall be enclosed and weathertight. HVAC system shall be operational. Temperature shall be maintained between 65 degrees F and 80 degrees F with relative humidity between 30% and 50%.

B. Storage: If rooms are not ready for installation, store product indoors, in ventilated areas with constant temperature range between 65 degrees F and 80 degrees F and relative humidity between 30% and 50%. Do not remove wrapping or packaging material.

C. Handling: Use proper moving equipment to unload and distribute equipment and utilize personnel that are experienced in moving furniture and equipment.

D. Waste Disposal: Casework installers shall remove refuse resulting from casework installation and leave installation site clean and free of debris.

1.8 WARRANTY

A. Lifetime Warranty: Provide written warranty with close-out documents stating manufacturer shall guarantee that all casework provided be free from defects in material and workmanship for the life of the product in the application and location installed. Purchaser shall notify Manufacturer's representative with reasonable promptness of any defective product. Manufacturer shall have a reasonable opportunity to inspect the goods. No product shall be returned except as specified in written shipping instructions provided by the manufacturer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design:

1. Casework Systems – Option A: Classic Series by Sheldon Laboratory Systems.
2. Casework Systems – Option B: Majestic Series by Diversified Casework.
3. Work Surfaces and Sinks: Epoxy Resin by Durcon.
4. Lab Accessories not Otherwise Indicated: Sheldon Laboratory Systems.

2.2 MATERIALS

A. General:

1. All casework shall be constructed in accordance with the recommended practices of the Scientific Equipment and Furniture Association.
2. The following definitions apply to wood laboratory casework units. Size and type of units is indicated on the drawings or equipment list.

a. Exposed Surfaces of casework include exterior surfaces visible after installation when all doors and drawer fronts are closed. Visible surfaces in open cases or behind clear glass doors shall be considered as exposed portions. Back of drawer fronts and panel doors shall be considered as exposed surfaces. Bottoms of wall hung cabinets shall be considered as exposed.
b. Semi-Exposed Surfaces of casework shall include interior surfaces exposed to view only when opaque doors are open.

c. Concealed or Unexposed Surfaces not visible after installation include back rails, top side rails, stretchers, web frames, blocking, components concealed by drawers, underside of knee spaces and drawer aprons, and tops tall cabinets and wall hung cabinets.

B. Casework Materials:

1. Materials used for construction of cabinets, cases and tables as specified herein shall meet or exceed the minimum standards as described.

a. All exterior surfaces exposed to view after installation, and all cabinet interior surfaces shall be Red Oak with the exception of back panels behind opaque doors which shall be Hardboard, and drawer boxes which shall be Birch.
b. Exposed solid wood: Plain sawn Red Oak lumber, Grade FAS or better, clear and free of defects. Lumber shall be air dried, then kiln dried, and tempered to a moisture content of 6%-9% before use.
c. Unexposed solid wood: Other hardwoods may be used that are Grade FAS or better, clear and free of defects, and properly dried in same manner as exposed solid wood.
d. Plywood: Hardwood Veneer Core Plywood, 3-ply (1/4 inch), 5-ply (1/2 inch), or 7-ply (3/4 inch) with select Red Oak, Grade A-1, plain sliced, book match, veneer face and back, and shall be compliant with ANSI/HPVA HP-1 2009. All 9-ply (1 inch) plywood shall be Grade A-1, whole piece, rotary cut, Oak veneer face and back. Use of other hardwood face veneer is acceptable in unexposed areas. Combination core with composite cross bands is acceptable in lieu of veneer core.
e. Plywood: Composite Core Plywood for cabinet drawer fronts and doors shall be 3-ply, 3/4 inch thick (19 mm) select Red Oak, Grade A-1, plain sliced, book match veneer face and back, and shall be compliant with ANSI A208.1-2009 (PBC) or ANSI A208.2-2009 (MDF).
f. Banding: Plywood panels shall be edge banded where specified herein with 3mm solid Oak edge band.
g. Hardboard: Tempered hardboard shall be 1/4 inch (6.35 mm) thick. All hardboard shall be composed of wood fibers and resinous binder compressed under heat and pressure.

2.3 FABRICATION

A. General:

1. Lab casework for this project shall be as follows.

a. Wood Species: Red Oak.
b. Wood Finish: Stained.
c. Door and Drawer Style: Reveal Overlay.
d. Door and Drawer Edges: Square Edge with Eased Edges.
e. Door and Drawer Corners: Square Corners Slightly Rounded Over.
f. Door and Drawer Edge Banding: Solid Oak (3 mm) to match Veneer.
g. Veneer Grains: Vertical Match.

1. Doors and drawer fronts on each cabinet are cut from a single Oak composite core plywood panel and match as a set.

2. Cabinets, tables, and other units shall be of the size and configuration indicated. Wood cabinetry is bored, doweled, grooved, and rabbeted construction.

3. Base Cabinet Construction:

   a. Cabinet End Panels: Oak veneer core plywood, 3/4 inch (19 mm) thick.
   b. End Panel Construction: Doweled and glued to top frame members, intermediate rails and bottoms.
   c. Vertical Partitions: Oak veneer core plywood, 3/4 inch (19 mm) thick.
   d. Exposed Edges: 3 mm solid Oak edge banding.
   e. Semi-Exposed Edges: 3 mm solid Oak edge banding.
   f. Shelf Edges: 3 mm solid Oak edge banding.
   g. Top Frame Rails: Nominal 1 inch (25 mm) x 3 inch (76 mm) solid Oak front rail, with back edge grooved to receive cross rails, and similar 1 inch (25 mm) x 3 inch (76 mm) solid Oak back rail, both set flush with cabinet ends, doweled and glued.
   h. Top Frame Cross Rails: Nominal 1 inch (25 mm) x 2-1/4 inch (57 mm) solid hardwood fully let into front and back rails with tongue and groove joints to form a full four-sided top frame.
   i. Intermediate Rails: Nominal 1 inch (25 mm) x 3 inch (76 mm) solid Oak. Provide on all base cabinets between drawer/drawer configurations and drawer/door configurations. Set flush with cabinet ends, doweled and glued.
   j. Bottom Panels: Oak veneer core plywood, 3/4 inch (19 mm) thick. Set flush with cabinet ends, doweled and glued.
   k. Exposed Back Panels: Oak plywood, 1/4 inch thick (6.35 mm) when cabinet interior is exposed. Recessed into grooved end panels and secured on all sides.
   l. Semi-Exposed Back Panels: Hardboard, 1/4 inch (6.35 mm) when cabinet interior is semi-exposed. Recessed into grooved end panels and secured on all sides.
   m. Recessed Front Toe Rail: Oak veneer core plywood, 4 inch (101 mm) x 3/4 inch (19 mm).
   n. Shelves: Oak veneer core plywood, 1 inch (25 mm). Adjustable on 32 mm centers, supported by four (4) nickel-plated steel pin and socket type shelf clips.
   o. Security Panels: Hardboard, 1/4 inch (6.35 mm). Provide between drawer/drawer and drawer/door base cabinets.

4. Wall Cabinet Construction:

   a. Cabinet End Panels: Oak veneer core plywood, 3/4 inch (19 mm). Doweled and glued to top and bottom panels.
   b. Vertical Partitions: Oak veneer core plywood, 3/4 inch (19 mm).
   c. Exposed Edges: Solid Oak edge banding (3 mm).
   d. Semi-exposed Edges: Solid Oak edge banding (3 mm).
   e. Shelf Edges: Solid Oak edge banding (3 mm).
   f. Top and Bottom Panels: Oak veneer core plywood, 1 inch (25 mm) thick. Set flush with cabinet ends, doweled and glued into place.

g. Exposed Back Panels: Oak plywood, 1/4 inch (6.35 mm) when cabinet interior is exposed. Rabbeted into ends and secured on all sides.
h. Semi-Exposed Back Panels: Hardboard, 1/4 inch (6.35 mm) when interior is semi-exposed. Rabbeted into ends and secured on all sides.
i. Cabinet Shelves: Oak veneer core plywood, 1 inch (25 mm). Adjustable on 32 mm centers and supported by four (4) nickel-plated steel pin and socket type shelf clips.
j. Top and Bottom Back Rails: Hardwood veneer core plywood, 3/4 inch (19 mm) x nominal 4 inch (101 mm). Doweled and glued into end panels, for attachment of cabinet to wall.

5. Tall Cabinet Construction:

a. Cabinet End Panels: Oak veneer core plywood, 3/4 inch (19 mm). Doweled and glued to top and bottom panels.
b. Vertical Partitions: Oak veneer core plywood, 3/4 inch (19 mm).
c. Exposed Edges: Solid Oak edge banding (3 mm).
d. Shelf Edges: Solid Oak edge banding (3 mm).
e. Top Panels: Oak veneer core plywood, 1 inch (25 mm). Set flush with cabinet ends, doweled and glued into place.
f. Bottom Panels: Oak veneer core plywood, 3/4 inch (19 mm). Set flush with cabinet ends, doweled and glued into place.
g. Top Back Rails and Center Back Rails: Solid hardwood, nominal 1 inch (25 mm) x nominal 3 inch (76 mm). Doweled and glued into end panels.
h. Bottom Back Rails: Hardwood veneer core plywood, nominal 3/4 inch (19 mm) x nominal 4 inch (101 mm). Doweled and glued into end panels.
i. Recessed Front Toe Rail: Oak veneer core plywood, 3/4 inch (19 mm) x nominal 4 inch (101 mm). Doweled and glued into end panels.
j. Exposed Back Panels: Oak plywood, 1/4 inch (6.35 mm) when cabinet interior is exposed. Recessed into grooved end panels and secured on four (4) sides.
k. Semi-Exposed Back Panels: Solid hardboard, 1/4 inch (6.35 mm) when cabinet interior is semi-exposed.
l. Shelves: Oak veneer core plywood, 1 inch (25 mm). One (1) center fixed shelf and four (4) adjustable shelves on 32 mm centers, supported by four (4) nickel-plated steel pin and socket type shelf clips.

6. Drawers and Doors:

a. Drawer Fronts:

1) Style: Reveal Overlay.
2) Core: Oak composite core plywood, 3/4 inch (19 mm).
3) Edges, Corners, Banding: Per Section 123500 2.3 A. 1.
4) Veneer Grains: Per Section 123500 2.3 A. 1.

b. Drawer Boxes:

1) Box Front, Sides, Back: Birch plywood (9-ply), 1/2” thick (13 mm).
2) Box Corner Joinery: Dovetail joinery.

3) Box Top Edges: Finshed top caps to conceal veneer cores.
4) Box Bottom: Solid hardboard, 1/4 inch (6.35 mm) thick, white prefinish.
5) Bottom Support: Set in grooves all sides and hot-melt glued.
6) Box Finish: Clear chemical resistant finish.

c. Panel Doors – Base Cabinets:

1) Style: Reveal Overlay.
2) Core: Oak composite core plywood, 3/4 inch (19 mm).
3) Edges, Corners, Banding: Per Section 123500 2.3 A. 1.
4) Veneer Grains: Per Section 123500 2.3 A. 1.

d. Panel Doors – Wall and Tall Cabinets:

1) Style: Reveal Overlay.
2) Core: Oak composite core plywood, 3/4 inch (19 mm).
3) Edges, Corners, Banding: Per Section 123500 2.3 A. 1.
4) Veneer Grains: Per Section 123500 2.3 A. 1.

7. Utility Tables / Peninsulas:

a. Framing: Fully framed with solid Oak rails, 3/4 inch (19 mm) x nominal 4 inch (101 mm) having radius edges. Rails connected with diagonal heavy-duty steel corner braces locked into grooves and screwed to inner face of rails. Intermediate rails shall be solid hardwood.
b. Legs: Laminated solid Oak, 2-1/4 inch, square (57 mm) having radius edges. Legs connected to diagonal corner braces with nut, washer and 3-1/2 inch x 5/16 inch carriage through bolt. Legs shall be equipped with rubber leg shoes and adjustable nylon glides.

2.4 LABORATORY GRADE WOOD FINISH

A. Wood finishes shall be as selected by Architect from manufacturer's full range of clear and transparent stained finishes.

B. Prior to application of wood finish, component parts shall be carefully sanded and buffed in preparation for the finishing process.

1. Exposed wood surfaces shall receive a stain and sealer coat of synthetic resin. Resin to be cured at elevated temperatures per manufacturer. Sealer coat shall be sanded, wiped clean. A double pass coat of chemical resistant synthetic resin shall be applied and cured at elevated temperatures.
2. Semi-exposed surfaces receive sealer coat and a double pass coat of chemically resistant synthetic resin.
3. Unexposed cabinet end panels receive a sealer coat.

C. Cabinet Wood Surface Finish Tests and Evaluation:

1. Applied finish system shall meet the performance test requirements and evaluations described under Paragraph 8.0 Cabinet Surface Finish Tests found in Section 8-W-2014 of the SEFA Recommended Practices for Laboratory Grade Wood Casework.
2. Paragraph 8.1 Chemical Spot Test and 8.1.1 thru 8.1.3. Testing of a Red Oak wood veneer panel without stain, using forty-nine (49) chemical reagents with each given a final rating system of Level 0, Level 1, Level 2, or Level 3. After testing, panel shall have no more than four (4) Level 3 conditions.
3. Paragraph 8.2 Hot Water Test and 8.2.1 thru 8.2.3. Testing of a Red Oak wood veneer panel without stain, using hot water with no visible effect.
4. Test Procedures shall be performed for manufacturer by an independent third party, SEFA approved, testing facility.

2.5 CASEWORK HARDWARE AND ACCESSORIES

A. Hinges: Institutional type, ground tip, five-knuckle, with pins of not less than .177” in diameter and leaves of not less than .095" thick. Hinges shall be 2-3/4” long wrought steel with chemical resistant epoxy powder coating. Two (2) hinges shall be provided on doors under 36" in height and three (3) hinges for doors 36" and over. Powder Coating Color: As selected by Architect from full range of Manufacturer’s colors and glosses.

B. Pulls: Solid metal, wire type, 4" long mounted with two (2) screws fastened from back. Pulls shall have chemical resistant epoxy powder coating to match hinges. Provide two (2) pulls for drawers over 24" wide. Powder Coating Color: As selected by Architect from full range of Manufacturer’s colors and glosses.

C. Drawer Slides: Shall be easily removable with a 100 lb dynamic load rating, and have self-closing, 3/4 extension, epoxy powder coated steel, nylon rollers, bottom mount, positive stop features. File drawers shall have full extension, zinc plated anochrome finish, ball bearing, side mount slides with lever release.

D. Door Catches: Provide two (2), top and bottom, dual, self-aligning magnetic catches on base and wall cabinet doors, and two (2) heavy-duty magnetic catches on tall cabinet doors.

E. Spring Actuated Latch: Latch has 4-5/8" bevel slide bolt with 2-1/4 lbs./in. actuating spring. Provide on tall cabinets with double doors where locks are specified.

F. Leg Shoes: Molded vinyl or rubber, black, coved bottom type.

G. Locks:

1. All lab casework and cabinet doors and drawers shall be lockable.
2. All lab casework and cabinet doors and drawers shall be keyed using same keying methodology indicated in Section 064116 Plastic-Laminate-Clad Architectural Cabinets.

2.6 WORK SURFACES, SINKS, AND ACCESSORIES

A. General:

1. Comply with physical and chemical resistance requirements for materials for tops, sinks, and accessories as specified herein and in accordance with SEFA 3-2010 Laboratory Work Surfaces.
2. Provide tops with smooth, clean, exposed surfaces and edges, in uniform plane, free of defects. Provide 4 inch (101 mm) high x 1 inch (25 mm) thick back splash and end splash where tops abut walls.

    a. Top sizes: Furnish tops in longest practical lengths, in configuration indicated.

B. Work Surfaces:

1. Epoxy Resin Tops: Shall consist of sheets cast from modified epoxy resin and non-asbestos inert fillers; compounded mixture cured and thermoset specifically from formulation to provide exceptional physical and chemical resistance required in medium to heavy duty laboratory environments.

    a. Wall counters shall be monolithic throughout without surface coating application, and shall be flat and 1" thick with 1/8" radiused or chamfered exposed edges. Provide drip grooves under all exposed edges. Exposed corners shall be eased slightly for safety. Bond joints of tops and splashes with highly chemical resistant cement with properties and color similar to base material. Color shall be as selected by Architect from Manufacturer's full range of standard colors.

    b. Minimum Physical Properties and Test Results:

TEST	ASTM	IMPERIAL
Rockwell Hardness	D785-08	109 (M scale)
Density	D792-00	133 (lb/ft3)
Compressive Strength	D695-02	33.5 (kpsi)
Flexural Strength	D790-07	14.9 (kpsi)
Fire Resistance	D635-06	Self-Extinguishing
Water Absorption	D570-98	0.008 (% after 24 hours)
Linear Thermal Expansion	D696-03	1.37x10-5 (in/in degree F)
Flame Spread Index	E84-06	0.29 (in)
Smoke Developed Index	E84-06	8.71 (in)

    c. Chemical Resistance Tests and Evaluation: Epoxy Resin Tops shall meet the performance test requirements and evaluations described under Paragraph 2.1.1 Chemical/Stain Resistance Test found in Section 3-2010 of the SEFA Recommended Practices for Laboratory Work Surfaces. Epoxy Resin Top material shall be tested using forty-nine (49) Reagents and shall result in no more than four (4) Level-3 conditions.

C. Sinks:

1. Epoxy Resin Sinks: Shall be one-piece, molded construction. Sinks to be "drop-in" style with inside corners and bottoms coved for easy cleaning. Sink color and finish to match work surfaces.
2. Basis of Design – Manufacturer: Durcon (A Wilsonart Company).

3. Basis of Design – Lab Stations and Teacher Stations: Model D30C, 18 inches (457 mm) x 15 inches (381 mm) x 10.75 inches (273 mm) deep.
4. Basis of Design – Accessible Stations: Model A26, 18 inches (457 mm) x 15 inches (381 mm) x 5 inches (127 mm) deep.

D. Sink Outlets:

1. Epoxy Resin Sinks: Provided with 1-1/2 inch (38 mm) diameter x 3 inch (76 mm) threaded polypropylene sink outlet with locknut, removable disc strainer, and sink stopper. Provide all accessories required for complete installation and connection to building plumbing system.

2.7 LABORATORY SERVICE FIXTURES, FITTINGS, AND ACCESSORIES

A. Water Faucets and Valves:

1. Provide units that comply with SEFA 7 – 2010, Laboratory Service Fittings Recommended Practices, and also complying with ANSI/ASME 112.18.1-2005 and certified by CSA International under CAN/CSA B.125.1-05.
2. Provide units fabricated from cast or forged red brass unless otherwise indicated.
3. Provide fittings complete with threaded mounting shanks, locknuts, and washers. Include necessary flanges, escutcheons, extension rods, etc.
4. Provide units complying with accessible requirements. Provide with 4” wrist blade handles at accessible sinks.
5. Where serrated hose ends are designated on any water faucets, provide the unit with a vacuum breaker.
6. Water faucets shall have self-contained renewable compression valve units with stainless steel valve seats. Compression unit valve stem shall be sealed with molded TFE stem packing to prevent leakage. Provide color coded index discs.

B. Quality Assurance:

1. All water faucets and service fixtures shall be fully assembled and factory tested prior to shipment.

C. Faucet and Fixture Finish:

1. All water faucets and service fixtures shall have chrome finish as selected by Architect from manufacturer’s full range of sheens for indicated finish type.

D. Vandal-Resistant Faucets:

1. Lab Stations and Teacher Stations: Model No. 80000VB by Sheldon Laboratory Systems:

a. Single cold water, deck mounted, gooseneck fixture.
b. Color coded nylon handle for cold water.
c. Wrist blade handles at accessible sinks.
d. Serrated tip hose connection and vacuum breaker.
e. Provide nominal 12 inches (305 mm) clear hose for each serrated tip.

E. Electrical Fixtures:

1. Electrical Fixtures that are a part of, or installed in the lab casework shall be approved by the National Board of Underwriters and must conform to city and state building codes.
2. Knock-out boxes when indicated, shall be installed in the lab casework.
3. Coordinate installation of electrical devices into lab casework and cabinetry as required.

2.8 LAB ACCESSORIES

A. Safety Glasses Cabinet:

1. Basis of Design: Model 31170 by Shedlon Laboratory Systems.
2. Size: 24-1/2 inches wide (622 mm) x 9-1/2 inches (241 mm) deep x 32 inches (813 mm) high.
3. Cabinet: White enameled 24 gage steel, lockable.
4. Racks: Eight (8) removable wire racks.
5. Interior Lamps for Sterilization with Timer Control.
6. Capacity: 48 pairs safety glasses or 40 pairs safety goggles.

B. Safety Goggles and Safety Glasses: Owner Furnished and Owner Installed.

2.9 LIST OF CHEMICALS

A. Owner shall provide a list of chemicals used in proposed new building upon request.

B. Owner shall not store any acids or chemicals in the proposed new building. Acids and chemicals shall be stored in proper storage facilities at the adjacent high school.

PART 3 - EXECUTION

3.1 EXAMINATION

A. The Contractor and casework provider shall verify that environmental conditions are acceptable within the building before casework installation begins. Any deficiencies related to building conditions shall be corrected prior to installation.

3.2 INSTALLATION

A. Installer Qualifications: The Installer shall have a minimum of five (5) years of experience installing laboratory casework using professional and accepted trade practices and be familiar with SEFA's Recommended Practices as described in SEFA 2-2010, and be certified by the manufacturer as an approved installer.

B. Coordination: Coordinate the work of this section with other trades including mechanical, plumbing and electrical connections to casework and accessories.

C. Performance:

1. Casework:

a. Set base cabinets in place, level, secure to walls or floors as necessary. Install fillers, trim and scribe to walls. Shim as required using concealed shims.
b. Screw continuous cabinets together with joints flush, tight and uniform.
c. Secure tall cabinets and wall cabinets to the walls. Secure these cabinets to solid supporting material. Provide grounds/blocking as necessary.

2. Work Surfaces:

a. Work surfaces shall be installed with nominal 1" overhang on the front and ends, unless otherwise indicated on the shop drawings.
b. Level and shim as necessary. Shims shall generally not exceed 1/8".
c. Install work surfaces to achieve a uniform alignment of the front edge of the top.
d. Joints shall be factory-prepared and located per the approved shop drawings.
e. Secure work surfaces to the understructure with adhesive or mechanical fasteners per the manufacturer's recommendations.
f. Backsplashes and end returns shall be secured in place with joints sealed per manufacturer's recommendation.

3.3 ADJUST AND CLEAN-UP

A. Adjust doors and drawers to operate smoothly.

B. Clean casework and touch-up as required.

C. Clean work surfaces.

D. Remove all debris, dirt, rubbish, and excess material as a result of the installation of this equipment and leave the site clean and orderly.

3.4 PROTECTION

A. Protect countertops with Kraft paper or cardboard after installation to help prevent damage from other trades.

B. Protect casework, work surfaces, fixtures and accessories from damage by work of other trades.

END OF SECTION 123500

SECTION 123623 - PLASTIC-LAMINATE-CLAD COUNTERTOPS

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. Plastic-laminate-clad countertops and splashes.

B. Related Requirements:

1. Section 064116 Plastic-Laminate Clad Architectural Cabinets for cabinetry supporting counters.
2. Section 123550 Laboratory Casework and Work Surfaces for wood science lab / science demonstration casework and related work surfaces and accessories for installation in Intermediate / Middle Science Lab, including support spaces, and Intermediate / Middle Science Demonstration including support spaces.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For plastic-laminate-clad countertops.

1. Include plans, sections, details, and attachments to other work. Detail fabrication and installation, including field joints.
2. Show locations and sizes of cutouts and holes for items installed in plastic-laminate-clad countertops.
3. Apply AWI Quality Certification Program label to Shop Drawings.

C. Samples: As follows:

1. Plastic Laminates: For each type, color, pattern, and surface finish required, 8 by 10 inches (200 by 250 mm) in size.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.

B. Product Certificates: For the following:

1. Composite wood and agrifiber products.
2. High-pressure decorative laminate.
3. Adhesives.

C. Quality Standard Compliance Certificates: AWI Quality Certification Program.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

1. Shop Certification: AWI's Quality Certification Program accredited participant.

B. Installer Qualifications: AWI's Quality Certification Program accredited participant.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver countertops only after casework and supports on which they will be installed have been completed in installation areas.

B. Store countertops in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

C. Keep surfaces of countertops covered with protective covering during handling and installation.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install countertops until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.

B. Field Measurements: Where countertops are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Established Dimensions: Where countertops are indicated to fit to other construction, establish dimensions for areas where countertops are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.1 PLASTIC-LAMINATE-CLAD COUNTERTOPS

A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of plastic-laminate-clad countertops indicated for construction, finishes, installation, and other requirements.

1. Where the Contract Documents contain requirements that are more stringent than the referenced quality standard. Comply with requirements of Contract Documents in addition to those of the referenced quality standard.

B. Grade: Custom.

C. High-Pressure Decorative Laminate: NEMA LD 3, Grade HGS.

D. Manufacturers, Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:

1. Basis of Design – High Pressure Laminate: Wilsonart.
2. Basis of Design – Backing: Fabricator's Option.
3. Basis of Design – Colors, Patterns and Finishes: Architect to select colors, patterns and finishes from laminate manufacturer's full range in the following categories:

a. Solid colors, gloss and matte finish.
b. Solid colors with core same color as surface, gloss and matte finish.
c. Wood grains, gloss and matte finish with grain running parallel to length of countertop.
d. Patterns, gloss and matte finish.

E. Edge Treatment: Same as laminate cladding on horizontal surfaces.

F. Core Material: Particleboard or MDF.

G. Core Material at Sinks: Exterior-grade plywood.

H. Core Thickness: 3/4 inch (19 mm).

1. Build up countertop thickness to 1-1/2 inches (38 mm) at front, back, and ends with additional layers of core material laminated to top.

I. Paper Backing: Provide dark-brown, phenolic-resin impregnated Kraft paper backing on underside of countertop substrate. Backing to be 0.015 inch (0.38 mm) minimum thickness.

2.2 WOOD MATERIALS

A. Wood Products: Provide materials that comply with requirements of referenced quality standard unless otherwise indicated.

B. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each type of countertop and quality grade specified unless otherwise indicated.

1. MDF: Medium-density fiberboard, ANSI A208.2, Grade 130 or better.
2. Particleboard: ANSI A208.1, Grade M-2 or better.
3. Softwood Plywood: DOC PS 1.

2.3 ACCESSORIES

A. Wire-Management Grommets: Circular, molded-plastic grommets and matching plastic caps with slot for wire passage.

1. Basis of Design: "EDP3" by Doug Mockett and Company, Inc.
2. Outside Diameter: 2-1/2 inches (63 mm).
3. Color: Black.

2.4 MISCELLANEOUS MATERIALS

A. Adhesive for Bonding Plastic Laminate: As selected by fabricator to comply with requirements.

1. Adhesive for Bonding Edges: Hot-melt adhesive or adhesive specified above for faces.

2.5 FABRICATION

A. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.

B. Fabricate countertops to dimensions, profiles, and details indicated. Provide front and end overhang of 1 inch (25 mm) over base cabinets.

C. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

D. Shop cut openings to maximum extent possible to receive appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately, and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition countertops to average prevailing humidity conditions in installation areas.

B. Before installing countertops, examine shop-fabricated work for completion and complete work as required, including removal of packing.

3.2 INSTALLATION

A. Grade: Install countertops to comply with same grade as item to be installed.

B. Assemble countertops and complete fabrication at Project site to the extent that it was not completed in the shop.

1. Provide cutouts for appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately, and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

C. Field Jointing: Where possible, make in the same manner as shop jointing, using dowels, splines, adhesives, and fasteners recommended by manufacturer. Prepare edges to be joined in shop so Project-site processing of top and edge surfaces is not required. Locate field joints where shown on Shop Drawings.

1. Secure field joints in countertops with concealed clamping devices located within 6 inches (150 mm) of front and back edges and at intervals not exceeding 24 inches (600 mm). Tighten according to manufacturer's written instructions to exert a constant, heavy-clamping pressure at joints.

D. Scribe and cut countertops to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

E. Countertop Installation: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.

1. Install countertops level and true in line. Use concealed shims as required to maintain not more than a 1/8-inch-in-96-inches (3-mm-in-2400-mm) variation from a straight, level plane.
2. Secure backsplashes to tops with concealed metal brackets at 16 inches (400 mm) on center and to walls with adhesive.
3. Seal joints between countertop and backsplash, if any, and joints where countertop and backsplash abut walls with mildew-resistant silicone sealant or another permanently elastic sealing compound recommended by countertop material manufacturer.

3.3 ADJUSTING AND CLEANING

A. Repair damaged and defective countertops, where possible, to eliminate functional and visual defects. Where not possible to repair, replace countertops. Adjust joinery for uniform appearance.

B. Clean countertops on exposed and semi-exposed surfaces.

C. Protection: Provide Kraft paper or other suitable covering over countertop surfaces, taped to underside of countertop at a minimum of 48 inches (1220 mm) on center. Remove protection at Substantial Completion.

END OF SECTION 123623